

...Upfront

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Spotlight on the U.S. Food System

In this issue of *FoodReview*, we take our annual look at the U.S. food system, including trends in food consumption and spending, domestic and international marketing, food safety, and domestic assistance programs.

Three articles focus on recent changes in food consumption and spending. Growing concern for healthy diet has fueled a rising interest in foods that are lower in fat. Per capita consumption of added fats, such as shortening and salad and cooking oils, peaked in 1993 and has been declining since. New technologies, especially fat substitutes, may help to further boost the sale of low-fat foods. Overall food consumption has continued its long-term trend toward more white meat, fruits and vegetables, grains, and caloric sweeteners. Per capita consumption of red meat and fluid milk has fallen, whereas cheese consumption has increased. Egg consumption has stabilized in the 1990's after many years of decline. Food spending was up 3.9 percent in 1997. Food away from home accounted for 44.8 percent of total food expenditures in 1997, a slight decline from its 1995 peak. Home meal replacement has been a popular trend in supermarkets.

Food marketing is also the subject of several articles. Spending for domestically produced food rose 2.6 percent in 1997, less than in some recent years. Continuing a historic trend, the farm share of the food dollar slipped to 21 cents while the marketing share grew. Higher wages in a tight labor market helped push marketing costs higher.

One beneficiary of higher food spending has been natural food stores, paralleling the trend toward healthier eating. The article on natural food supermarkets traces the recent surge in large stores of this type, which have made natural foods more accessible to consumers.

Spending on food away from home rose about 60 percent between 1987 and 1997, reflecting busier lifestyles and higher disposable incomes. Fast-food outlets have overtaken full-service restaurants.

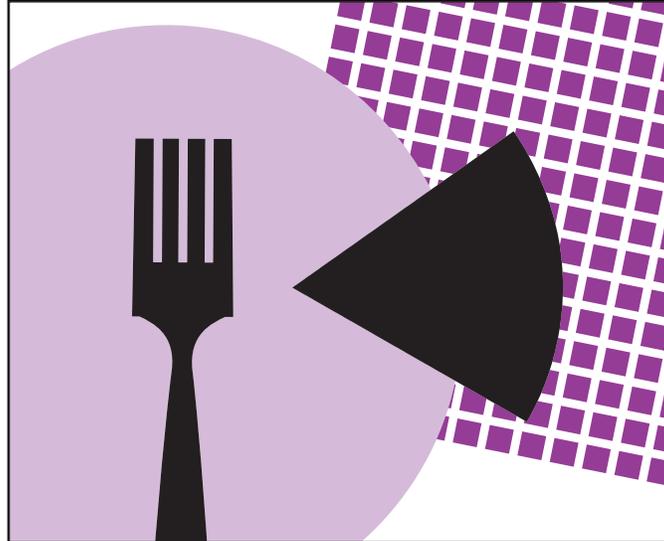
Major food safety programs and issues are highlighted by several charts in the food safety section. These will be explored in more detail in the food safety theme issue for May-August 1999.

Food assistance expenditures have been falling since fiscal 1997, reflecting the strong economy, low unemployment, and welfare reform. The sharpest drop in spending has been for food stamps, many recipients of which have been made ineligible by welfare reform.

Our final article examines the international trade in processed food. After peaking in 1995, the U.S. processed food trade surplus has fallen from \$4.4 billion to \$1.1 billion in 1997. Growing exports were outpaced by import growth. North American Free Trade Agreement partners, Mexico and Canada, have become increasingly important for both exports and imports.

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Inside...



Food Consumption and Spending

- 2 U.S. Per Capita Food Supply Trends
—Judy Putnam and Jane Allshouse
- 12 Have We Turned the Corner on Fat Consumption?
—Scott Sanford and Jane Allshouse
- 18 Spotlight: National Food Spending—
Spending for Food Increased Almost 4
Percent in 1997
—Annette Clauson

Food Marketing

- 21 Marketing Bill Rose, While Farm Value
Declined in 1997
—Howard Elitzak
- 25 Natural Foods Supermarkets Gaining in
Popularity
—Phil R. Kaufman
- 28 Sales of Meals and Snacks Away From
Home Continue To Increase
—Charlene C. Price

- 31 Nontraditional Retailers Are Challenging
Traditional Grocery Stores
—Phil R. Kaufman

Food Safety

- 34 Food Safety at a Glance
—Steven Crutchfield

Food Assistance

- 36 Spotlight: Food Assistance—Domestic
Food Assistance Expenditures Continue
To Decline
—Victor Oliveira

International Market Trends

- 38 Processed Food Trade Surplus Narrowed
in 1997
—Charles R. Handy and Steven A. Neff

U.S. Per Capita Food Supply Trends

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The American diet has changed considerably over the last two decades. Beef consumption, for example, fell 26 percent between 1977 and 1997, while chicken consumption rose 75 percent, turkey 101 percent, and fish and shellfish 15 percent (table 1). Fresh fruits and vegetables reached record levels in 1997, with fresh mangoes one of the biggest gainers, increasing 881 percent between 1977 and 1997.

A variety of factors are responsible for the changes in U.S. consumption patterns in the last 20-plus years, including changes in relative prices, increases in real (adjusted for inflation) disposable income, and more food assistance for the poor. New products, particularly more convenient ones, also contribute to shifts in consumption, along with more imports, growth in the away-from-home food market, expanded advertising programs, and increases in nutrient-enrichment standards and food fortification. Sociodemographic trends also driving changes in food choices include smaller households, more two-earner households, more single-parent households, an aging population, and increased ethnic diversity. An expanded scientific base relating

diet and health; new *Dietary Guidelines for Americans*, designed to help people make food choices that promote health and prevent disease; improved nutrition labeling; and burgeoning consumer interest in nutrition also influence marketing and consumption trends.

USDA's Economic Research Service (ERS) publishes per capita consumption statistics annually. ERS estimates are based on food disappearance data (see box, "How Food Consumption Is Measured"). These data are used as a proxy to estimate human consumption, even though the data may overstate what is actually eaten because they represent food supplies available in the market and do not account for waste.

Record-High Meat Consumption in 1998

In 1997, total meat consumption (red meat, poultry, and fish) amounted to 190 pounds (boneless, trimmed-weight equivalent) per person, 13 pounds above the 1970 level (fig. 1a). Each American consumed an average of 21 pounds less red meat (mostly less beef) than in 1970, 31 pounds more poultry, and 3 pounds more fish and shellfish. 1998's total per capita meat consumption is expected to be a record 195 pounds.

Red meat—beef, pork, lamb, and veal—accounted for 58 percent of

the total meat supply in 1997, on a boneless, trimmed-weight basis, compared with 70 percent in 1980 and 74 percent in 1970. By 1997, chicken and turkey accounted for 34 percent of the total meat consumed, up from 23 percent in 1980 and 19 percent in 1970. Fish and shellfish accounted for 8 percent of total meat consumption in 1997 and 7 percent in 1980 and 1970.

Per capita consumption of beef reached an all-time high of 89 pounds (boneless, trimmed-weight equivalent) in 1976 when beef supplies were at record levels because of liquidation of the Nation's beef herd (fig. 1b). It dropped significantly in the late 1970's, remained flat in the early 1980's, and then, from a 1980's high of 75 pounds per capita in 1985, declined steadily to 61.5 pounds in 1993. In 1994-98, increasing supplies of beef and declining beef prices spurred a 2- to 3.5-pound increase in annual per capita consumption of beef. Consumer concerns about cholesterol and saturated fat, inconsistent quality, and lack of convenience in preparation are behind the negative trend in beef demand.

Beginning around 1960, in response to concerns about fat and cholesterol, beef producers began shifting production from the very fat English breeds like Hereford and

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Angus to the bigger, rangier, less fat, faster growing exotic breeds. This shift led to increasing inconsistency in the quality of beef—a less tender, less juicy, less succulent product. By 1995, one of four steaks was too tough to chew, according to the 1995 National Beef Quality Audit. In addition, the mass entry of women into the paid labor force has drastically reduced consumption of beef roasts and other beef cuts requiring lengthy cooking times.

Beef has lagged behind poultry and pork in marketing value-added, convenience items. In January 1999, the beef industry launched a new advertising campaign that uses the familiar “Beef, It’s What’s for Dinner” tagline and aims to inform consumers and beef industry channels about a new trend—beef dishes that are fully cooked and ready to microwave and serve in 10 minutes. Such dishes include traditional beef favorites like pot roast, meat loaf, and beef ribs. In addition, the beef industry funded new genetic research in 1998, findings from which may foster the marketing of beef products that are juicier and more consistent in quality, and that carry brand names.

In contrast, per capita consumption of chicken, which remained flat in the early 1970’s, steadily increased from 26 pounds (boneless-weight equivalent) in 1975 to 50 pounds a year in 1997 and 51 pounds in 1998. Similarly, per capita consumption of turkey climbed from 6.5 pounds in 1975 to 14 pounds a year in 1997 and 1998. The poultry industry has enjoyed great success, partly by catering to consumers. The industry has provided scores of new brand-name, value-added products processed for consumers’ convenience, as well as a host of products for foodservice operators. Poultry has also benefited from health-related concerns about beef.

Year-to-year fluctuations in pork consumption are often quite large,

but consumption has been fairly stable in the long run. In fact, annual per capita pork consumption averaged 47.6 pounds per person in 1970-74 and 47.8 pounds per person in 1994-98. The 1990’s quantity, however, contained much more lean and much less fat. Through improved breeding and husbandry practices and greater trimming of outside fat on retail cuts, the pork industry has lowered the fat content of retail pork by more than 30 percent since the 1970’s. The industry has capitalized on this accomplishment by portraying pork as a light and nutritious alternative to chicken with its “Pork: The Other White Meat” advertising campaign, which debuted in 1987. Research indicates that consumers now are less likely to perceive pork negatively in terms

of fat, calories, and cholesterol than before the advertising began. The campaign focused on the industry’s leaner cuts and lower fat products.

U.S. per capita seafood consumption for 1997 is estimated at 14.5 pounds, down from a record high of 16.1 pounds in 1987. Despite the 10-percent decline from the 1987 level, average consumption in 1997 was still 24 percent above 1970. Between 1970 and 1997, increased consumption of fresh and frozen fish and shellfish accounted for all of the growth, rising 42 percent, while canned products held steady, and consumption of cured items fell. Average seafood consumption increased 24 percent from 1970 to 1997, even though seafood prices outpaced those of other protein sources during those years.

How Food Consumption Is Measured

USDA’s Economic Research Service annually calculates the amount of food available for consumption in the United States. The U.S. food supply series measures national consumption of several hundred basic commodities. It is the only continuous source of data on food and nutrient availability in the country.

The food supply series is based on records of commodity flows from production to end uses. Therefore, the total available supply is the sum of production, beginning inventories, and imports. These three components are either directly measurable or are estimated by government agencies using sampling and statistical methods.

The food available for human use reflects what is left from available supplies after deducting exports, industrial uses, farm inputs, and end-of-year inventories. Human food use is not directly measured or statistically estimated. Instead, it is a residual component after subtracting out other uses from the available total supply.

The availability of food for human use represents disappearance of food into the marketing system, and it is often referred to as food disappearance. Food disappearance measures food supplies for consumption through all outlets—at and away from home. Per capita food use, or consumption, is calculated by dividing the total annual food disappearance by the total U.S. population.

Food disappearance is often used as a proxy to estimate human consumption. Used this way, the data usually provide an upper bound on the amount of food available for consumption. In general, food disappearance data indicate trends in consumption over time rather than absolute levels of food eaten. Food disappearance estimates can overstate actual consumption because they include amounts that may be discarded during processing or marketing, lost in spoilage, or thrown away at home. For example, the food estimates may overstate fats and oils, since large amounts are used for frying by fast-food restaurants and are later discarded.

Consumer Price Indexes (CPI's) for fish, red meat, and poultry climbed 466 percent, 297 percent, and 194 percent, from 1970 to 1997.

Nutritional concern about fat and cholesterol has encouraged the production of leaner animals, the closer trimming of outside fat on retail cuts of meat, the marketing of lower fat ground meat and processed meat products, and consumer substitution of poultry for red meat—significantly lowering the meat, poultry, and fish group's contribution to total fat and saturated fat in the

food supply. Despite near record-high per capita consumption of total meat in 1994, the proportion of fat in the U.S. food supply contributed by meat, poultry, and fish declined from 35 percent in 1970 to 25 percent in 1994 (the latest year for which nutrient data are available). Similarly, the proportion of saturated fat contributed fell from 37 percent to 26 percent.

The next decade will undoubtedly bring more changes. Technological advances will mean a host of new products in the meat case. With little

increase in overall consumption of meat products expected in the next decade, the beef, pork, poultry, and fish industries will try to capture a larger share of a stagnant market by offering more prepared products.

Egg Consumption in 1997 Reached Highest Level Since 1988

Between 1970 and 1989, total annual consumption of shell eggs and egg products steadily declined

Table 1
Consumption Statistics Show 20 Years of Change

Item	Unit	Per capita consumption		Percent change, 1977-97 ¹
		1977	1997	
Some gainers...				
Bottled water	gal	1.3	13.1	925
Mangoes	lb	.1	1.5	881
High fructose corn syrup ²	lb	9.6	62.4	550
Limes	lb	.2	1.2	398
Fresh broccoli	lb	1.1	4.1	273
Garlic	lb	.6	2.1	250
Mozarella cheese	lb	2.5	8.4	239
Heavy cream	½ pt	1.0	3.6	232
Skim milk	gal	1.3	4.0	189
Cream cheese	lb	.8	2.3	187
Diet carbonated soft drinks	gal	4.3	11.6	170
Rice	lb	7.5	19.5	160
Bell peppers	lb	2.8	7.2	157
Fresh mushrooms	lb	.9	2.2	151
Corn flour and meal	lb	6.6	16.4	149
Apple juice	gal	.7	1.6	142
Honeydew melons	lb	1.1	2.6	136
Fresh carrots	lb	5.3	12.5	136
Parmesan cheese	lb	.3	.6	136
Grape juice	gal	4.3	5.9	134
Fresh asparagus	lb	.3	.7	133
Fresh grapes	lb	3.5	8.0	127
Fresh strawberries	lb	1.9	4.2	119
Yogurt, excluding frozen	½ pt	4.3	9.5	119
Provolone cheese	lb	.3	.8	118
Ricotta cheese	lb	.4	.9	118
Low-fat cottage cheese	lb	.6	1.3	105
Cantaloup	lb	5.8	11.7	102
Turkey ³	lb	6.9	13.9	101
Frozen broccoli	lb	1.2	2.3	92
Papayas	lb	.3	.5	91
Sour cream	½ pt	3.1	5.6	81

Continued—

about 4 eggs per person per year, from 309 eggs to 237. During the 1990's, total egg consumption has leveled off, fluctuating between 234 and 238 eggs per person per year. Per capita consumption was 238 eggs in 1997 and is forecast to be 242 eggs in 1998. The record high for U.S. per capita egg consumption was 403 eggs in 1945.

The decline in per capita egg consumption over the last few decades reflects two very different and somewhat counterbalancing trends: a dominating, nearly constant

decline in consumption of shell eggs, and a partially offsetting growth in consumption of egg products during the 1980's and 1990's.

Shell-egg consumption dropped from 276 eggs per capita in 1970 to 173 in 1997. The average annual rate of decline in per capita shell-egg consumption was four eggs per year in the 1970's and five eggs per year in the 1980's. In the 1990's, the rate of decline in per capita consumption of shell eggs has slowed to two and a half eggs per year and is expected to slow even more.

Much of the decline in shell-egg consumption since 1970 was due to changing lifestyles (for example, less time for breakfast preparation in the morning as large numbers of women joined the paid labor force) and the perceived ill effects of the cholesterol intake associated with egg consumption.

Declining wholesale and retail egg prices may have spurred egg use in recent years. The average retail price for a dozen large, Grade A eggs declined from \$1.01 in 1990 to \$0.86 in 1994. In 1997, it rose to

Table 1
Consumption Statistics Show 20 Years of Change—Continued

Item	Unit	Per capita consumption		Percent change, 1977-97 ¹
		1977	1997	
Fresh cucumbers	lb	3.5	6.3	80
Corn starch	lb	2.3	4.1	78
Chicken ³	lb	29.0	50.9	75
Fresh pineapple	lb	1.4	2.4	75
Durum wheat flour	lb	7.5	12.5	67
1% and 0.5% milk	gal	1.6	2.6	65
Fresh onions	lb	11.1	17.9	61
Oat products	lb	4.1	6.5	60
Ready-to-eat cereals	lb	9.4	14.3	53
Fresh tomatoes	lb	12.4	18.9	52
Salad and cooking oils	lb	19.1	28.7	50
Fresh spinach	lb	.4	.6	50
Some losers...				
Veal ³	lb	2.6	.9	-68
Canned asparagus	lb	.5	.2	-60
Whole milk	gal	19.5	8.5	-58
Canned beets	lb	2.0	.9	-55
Canned green peas	lb	3.0	1.5	-50
Canned sauerkraut	lb	2.2	1.1	-50
Total cottage cheese	lb	4.7	2.7	-43
Distilled spirits	gal	2.0	1.2	-37
Dehydrated onions	lb	1.3	.9	-31
Cane and beet sugar	lb	94.2	66.5	-29
Canned corn	lb	14.1	10.0	-29
Beef ³	lb	86.3	63.8	-26
Lamb ³	lb	1.1	.8	-26
Margarine	lb	11.6	8.6	-25
Canned fruit	lb	21.9	18.0	-18
Beverage milk	gal	29.0	24.0	-17
Celery	lb	7.0	6.0	-14
Eggs	no	267.0	238.1	-11

Notes: ¹Percent computed from unrounded data. ²Dry weight basis. ³Boneless, trimmed weight. Source: Judith Jones Putnam and Jane E. Allshouse, *Food Consumption, Prices, and Expenditures, 1970-97*. SB-965. USDA's Economic Research Service, Apr. 1999.

Figure 1a
Americans are eating more, but leaner, meat...

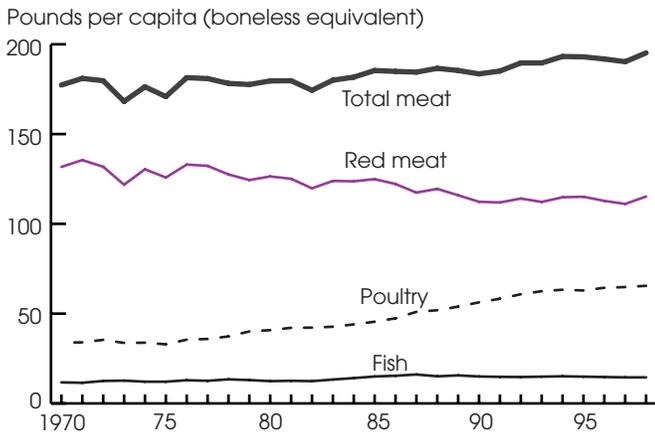


Figure 1b
But they are eating less beef and more chicken

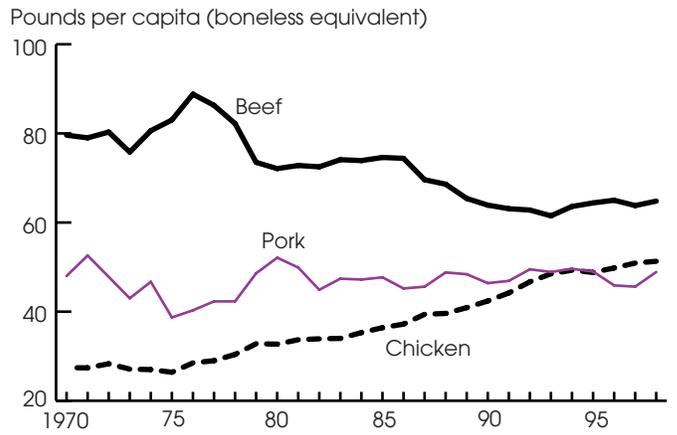
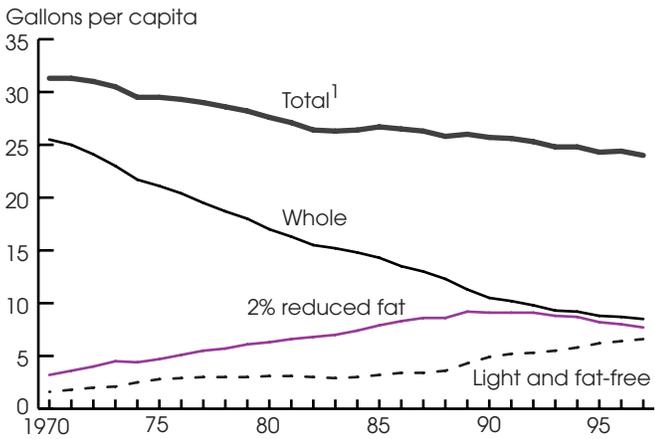
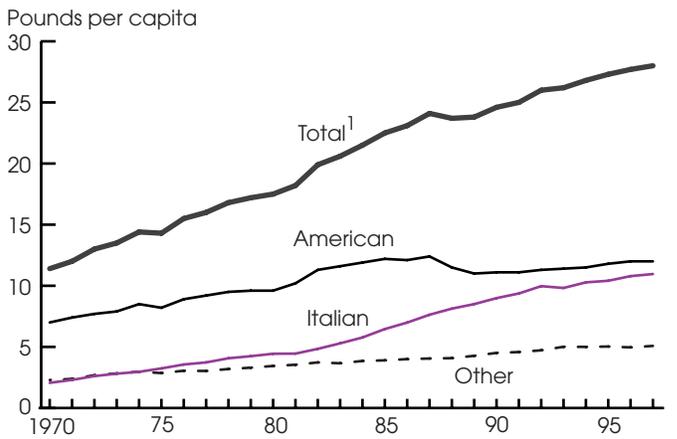


Figure 2a
Americans are drinking less milk...



Note: ¹Includes flavored milk and buttermilk.

Figure 2b
But, cheese consumption continues to rise



Note: ¹Excludes cottage cheese.

Figure 3a
Consumption of added fats increased 25 percent between 1970 and 1997...

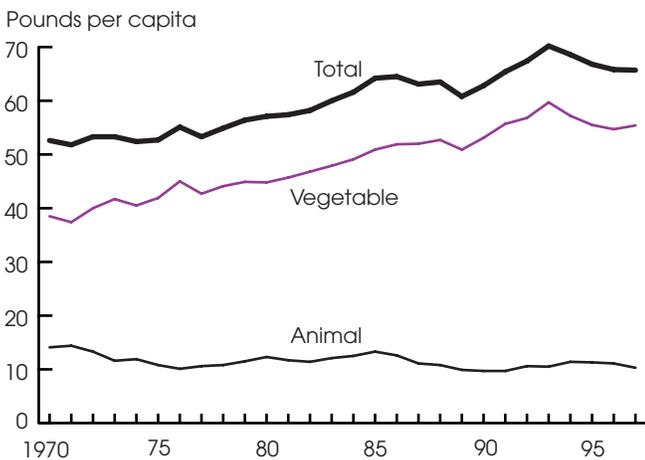


Figure 3b
But, it was down 7 percent from 1993's record, as declines in shortening and table spreads offset an increase in salad and cooking oils

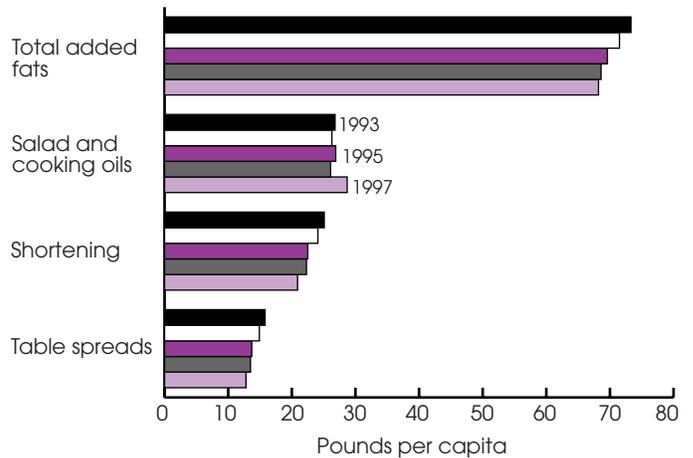
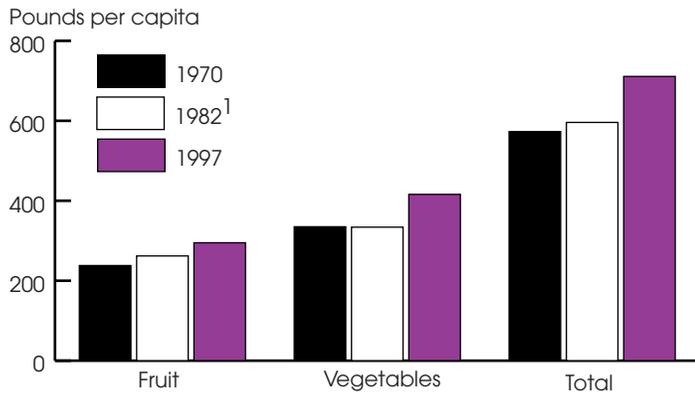
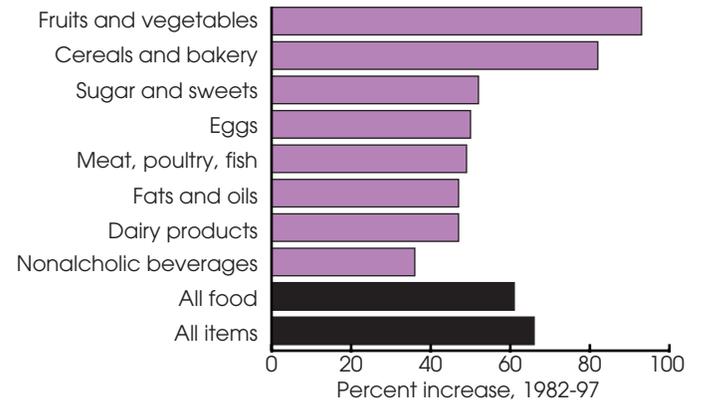


Figure 4a
Fruit and vegetable consumption increased 19 percent from 1982 to 1997...



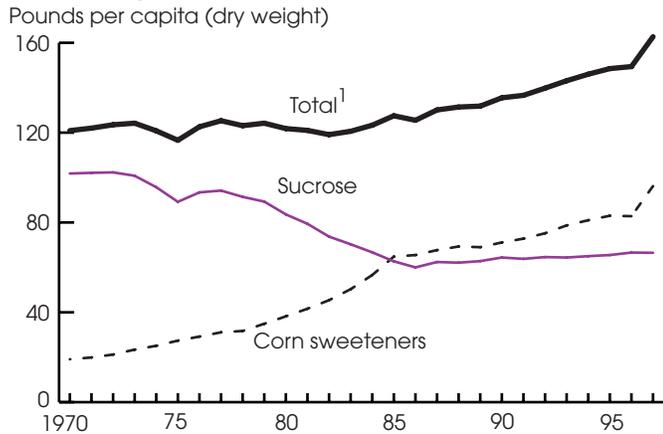
Note: ¹Publication of *Diet, Nutrition, and Cancer*, which emphasized the importance of fruit and vegetables in the daily diet.

Figure 4b
Even as fruits and vegetables led in retail price increases



Source: Calculated by USDA's Economic Research Service from the Consumer Price Index.

Figure 5a
Caloric sweetener consumption rose 26 percent from 1970 to 1997; 85 percent of that increase occurred since 1986...



Note: ¹Includes honey, molasses, and other refiner's syrups.

Figure 5b
Accordingly, consumption of nondiet carbonated soft drinks jumped 47 percent from 1986 to 1997

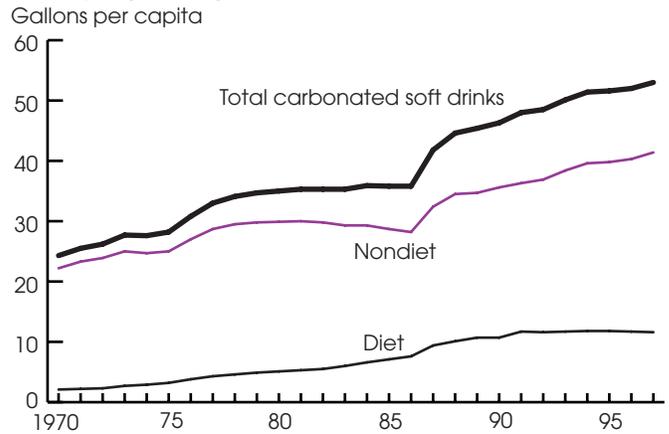
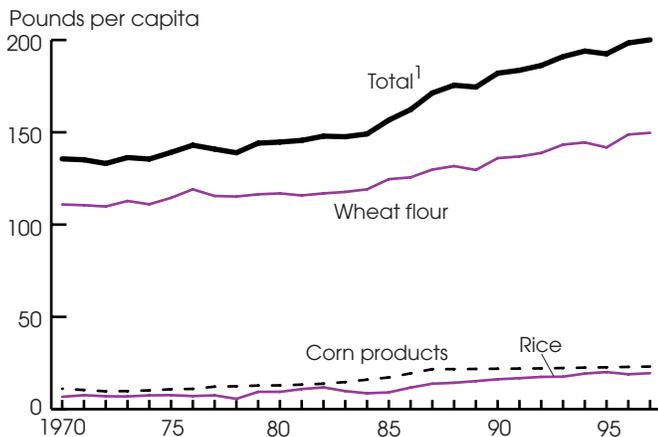
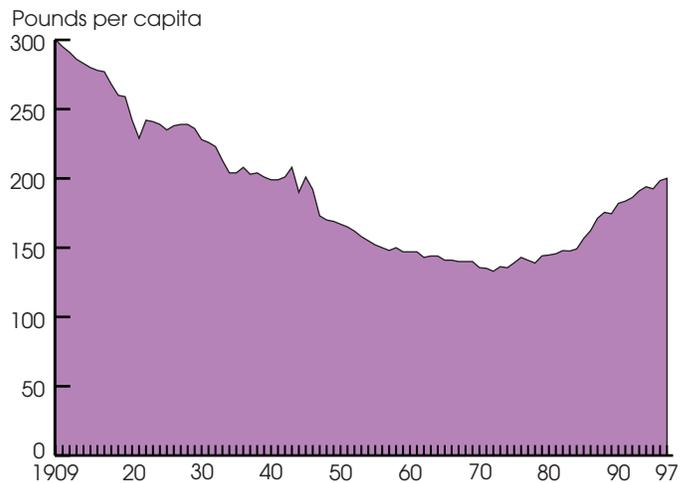


Figure 6a
Consumption of flour and cereal products increased 50 percent between 1972 (an all-time low) and 1997...



Note: ¹Includes oat, rye, and barley products.

Figure 6b
But in 1997, it remained 100 pounds below the 1909 level



\$1.06. The CPI for eggs increased 13 percent between 1990 and 1997. That compares with a 19-percent increase in the CPI for all food during the same period and a 27-percent increase in the CPI for cereals and bakery products.

Changing consumer attitudes toward eggs may also be responsible. New test results show eggs to contain less cholesterol than previously documented, leading the American Heart Association to increase its maximum recommended consumption from three eggs per week to four.

Consumption of egg products has nearly doubled since 1983, reaching the equivalent of 68 eggs per person by 1998. The growth period followed more than two decades of relatively constant consumption. Egg product consumption will continue to increase as consumers opt for more prepared foods.

Nation Fails To Cut Milkfat Consumption

In 1997, Americans drank an average of 23 percent less milk and ate nearly 2-1/2 times as much cheese (excluding cottage types) as in 1970. Annual per capita consumption of milkfat from fluid milk products (beverage milks and yogurt) has declined by half since 1970 due to lower milk consumption and a trend toward lower fat milks. Americans cut their average consumption of fluid whole milk by two-thirds between 1970 and 1997, and nearly tripled their use of lower fat milks. But because of the growing yen for cheese and fluid cream products, the Nation failed to cut the overall use of milkfat. (Annual average consumption of milkfat from some other dairy products—butter, frozen dairy products, condensed milk, evaporated milk, dry milk, and cottage-type cheeses—also declined during 1970-97 due to lower con-

sumption of these products and increasing preference for lower fat versions.)

Annual per capita consumption of beverage milk declined from 31 gallons in 1970 to 24 gallons in 1997 (fig. 2a). A sixfold increase in per capita consumption of yogurt since 1970—to 9.5 half-pint servings per person in 1997—partially offset the decline in beverage milks. Consumption of soft drinks, fruit drinks and ades, and flavored teas may be displacing beverage milk in the diet. Big increases in eating away from home, especially at fast-food places, and in consumption of salty snack foods favored soft drink consumption.

The beverage milk trend is toward lower fat milk. While whole milk represented 81 percent of all beverage milk (plain, flavored, and buttermilk) in 1970, its share dropped to 35 percent in 1997. As a result, total beverage milk contributed 51 percent less fat to the average American's diet in 1997 than in 1970. In contrast, rising consumption of fluid cream products meant that they contributed two times as much milkfat to the average diet in 1997 as in 1970. (Per capita consumption of fluid cream products—half-and-half, light cream, heavy cream, eggnog, sour cream, and dips—jumped from 9.8 half pints in 1970 to 17.0 half pints in 1997.)

On balance, however, annual per capita consumption of milkfat from all fluid milk and cream products declined 37 percent in 1970-97, from 9.1 pounds per person to 5.8 pounds. Of that 5.8 pounds, whole milk contributed 2.4 pounds; lower fat milks, 1.7 pounds; and fluid cream products, 1.6 pounds. Skim milk added 0.05 pound of fat to the average diet in 1997, and yogurt (most of which is reduced fat or fat-free) added 0.09 pound of fat.

Average consumption of cheese (excluding full-skim American and cottage, pot, and baker's cheeses)

increased 146 percent between 1970 and 1997, from 11 pounds per person to 28 pounds (fig. 2b). Lifestyles that emphasize convenience foods were probably major forces behind the higher consumption. In fact, two-thirds of our cheese now comes in commercially manufactured and prepared foods (including foodservice), such as pizza, tacos, nachos, salad bars, fast-food sandwiches, bagel spreads, sauces for baked potatoes and other vegetables, and packaged snack foods. Advertising and new products—such as reduced-fat cheeses and resealable bags of shredded cheeses, including cheese blends tailored for use in Italian and Mexican recipes—also had an effect.

From 1970 to 1997, consumption of Cheddar cheese, America's favorite cheese, increased 66 percent to 9.6 pounds per capita. Per capita consumption of mozzarella—the main pizza cheese—in 1997 was 8.4 pounds, more than 7 times higher than in 1970, making it America's second favorite cheese. Cream cheese (including Neufchatel) overtook Swiss in the 1980's to become America's third favorite cheese, with consumption at 2.3 pounds per person in 1997. Despite the flurry of lower fat cheese introductions in the 1990's, these products still accounted for a fifth (reduced-fat, 16 percent; nonfat, 4 percent) of supermarket cheese sales for the 52 weeks ending July 11, 1998 (at 20 percent, that is down 2 percentage points from 2 years earlier), according to the International Dairy Foods Association. In the year ending July 11, 1998, sales of nonfat cheese fell 20 percent, while sales of reduced-fat cheese and regular cheese increased 3.3 percent and 4.0 percent, respectively. Lower fat cheeses make up a much smaller proportion of the total cheese used by food manufacturers and foodservice operators.

Consumption of Added Fats Jumped 25 Percent Between 1970 and 1997

Average use of added fats and oils in 1997 was a fourth above the 1970 level (fig. 3a). Added fats and oils include fats and oils used directly by consumers, such as butter on bread, as well as shortenings and oils used in commercially prepared cookies, pastries, and fried foods. Excluded is all fat naturally present in foods, such as in milk and meat.

However, Americans' overriding nutrition concern in the mid-1990's with cutting dietary fat is apparent in the recent per capita food supply data, which shows a modest decline since 1993 in the use of added fats and oils (fig. 3b). Annual per capita consumption of added fats and oils declined 7 percent between 1993 and 1997, from a record-high 70.2 pounds (fat-content basis) per person to 65.6 pounds. Declines in consumption of shortening and table spreads more than offset an increase in use of salad and cooking oils.

Studies in the 1950's and 1960's showed that replacing saturated fatty acids (SFA's) and animal fat with polyunsaturated fatty acids (PUFA's) lowered serum cholesterol levels (Keys, Anderson, and Grande, 1957). Consequently, diets high in PUFA's were widely recommended for the prevention of heart disease. Within the added fats and oils group, animal fats declined roughly a fifth from 1970 to 1997, on a per capita basis, and vegetable fats increased roughly two-fifths. Per capita consumption of salad and cooking oils (high in PUFA's) nearly doubled between 1970 and 1997, from 15 pounds per person to 29 pounds.

However, concern later developed about the safety of PUFA's, and interest in the health benefits of monounsaturated fatty acids (MUFA's) also increased. Some

research suggests that replacing SFA's with PUFA's reduces LDL cholesterol but also reduces beneficial HDL cholesterol, while replacing SFA's with MUFA's lowers LDL cholesterol but leaves HDL levels stable. In addition, PUFA's are more easily oxidized than MUFA's, making PUFA's more likely to contribute to atherosclerosis. Monounsaturated fatty acids are the most common fat in foods, but they are particularly plentiful in olive oil, canola oil, almonds, and avocados. In the 1997 food supply, olive oil and canola oil together accounted for 16 percent of total salad and cooking oils, up from 2 percent in 1985. Canola oil also is used in some soft, liquid oil margarines.

In 1993, health concern about trans fatty acids (or trans fats) hit newspaper headlines. Trans fats are created when liquid oils are hydrogenated to make them more solid and stable at room temperature. They raise LDL cholesterol and lower beneficial HDL cholesterol levels, and are associated with increased risk of coronary heart disease. These hydrogenated fats are used in everything from margarines, shortenings, crackers, cookies, baked goods, and peanut butter to foods fried in fast-food eateries, fried snack foods, and even some soups, beans, and cereals. From 1993 to 1997, consumption of margarine declined 23 percent per capita and consumption of shortening declined 17 percent per capita. About 40 percent of the margarine on supermarket shelves today is the old-fashioned stick variety, with the other 60 percent made up of tub or liquid margarines. In 1970, most margarine was the stick variety. In general, the softer the margarine, the lower its percentage of partially hydrogenated oils, and thus the lower the amount of trans fats.

The next generation of margarines may be launched in 1999. In December 1998, the Food and Drug Administration notified the makers

of Benacol Spread and Take Control, two new margarines that promise to lower serum cholesterol, that it is willing to consider classifying the ingredients in their products as "generally recognized as safe." According to studies and clinical trials, both margarines, which are derived from sterols, are proven to reduce levels of LDL cholesterol by up to 13 percent with minimum daily use.

Fruits and Vegetables: The Array of Choices Widens

As Americans increasingly embrace national health authorities' recommendation of consuming at least five fruits and vegetables a day, their array of choices continues to widen. Fresh-cut fruits and vegetables, prepackaged salads, locally grown items, and exotic produce—as well as hundreds of new varieties and processed products—have been introduced or expanded since the early 1980's. Supermarket produce departments carry over 400 produce items today, up from 250 in the late 1980's and 150 in the mid-1970's. Also, the number of ethnic, gourmet, and natural foodstores—which highlight fresh produce—continues to rise.

Consumers increasingly have more access to fresh, local produce as well. The number of farmers' markets reported to State agriculture departments has grown substantially throughout the United States over the last several decades, numbering around 1,755 at the end of 1993 and eclipsing 2,746 in 1998. Some analysts suggest that the total number of farmers' markets, including those not reported, is more than double that figure.

While the overall market for fruits and vegetables has expanded in the last 15 years, the mix has changed.

Shifts have taken place among traditional produce items and between fresh and processed forms. Traditional varieties have lost market share to specialty varieties, and exotic produce has gained favor. For example, per capita consumption of iceberg lettuce fell by 4.4 pounds (or 15 percent) between 1989 and 1997, while per capita consumption of romaine and leaf lettuces increased 2.5 pounds (or 69 percent) during the same period. In addition, many specialty lettuces not yet tracked in USDA's food supply database—such as radicchio, frisee, arugula, and red oak—gained in popularity in the last several years because of inclusion in fresh-cut salad mixes and in upscale restaurant menus.

Total per capita use of the 129 commercially produced fruits and vegetables for which ERS has U.S. production data rose 24 percent, from 573 pounds in 1970 to 711 pounds in 1997 (fig. 4a). Four-fifths of this increase occurred since 1982, the year in which an expert scientific panel convened by the U.S. National Academy of Sciences published its landmark report *Diet, Nutrition, and Cancer*. The report emphasized the importance of including fruits (especially citrus fruits), vegetables (especially carotene-rich and cruciferous, or cabbage family, vegetables), and whole-grain cereal products in the daily diet, noting that these dietary guidelines were consistent with good nutritional practices and likely to reduce the risk of cancer.

The 19-percent gain in fruit and vegetable consumption between 1982 and 1997 was probably tempered by the fact that fruits and vegetables led in retail price increases from 1982 to 1997 (fig. 4b). Price increases for fresh fruits and vegetables were more than double those for processed items. Despite the bigger price increases for fresh than processed products, per capita consumption from 1982 to 1997

increased 24 percent for fresh fruits and 5 percent for processed fruits. Better quality, increased variety, and year-round availability have boosted consumption of fresh fruits and vegetables. Price, convenience, and increasing preference for fast-food eateries and ethnic foods have hiked consumption of frozen vegetables (especially french fries) and canned tomato products.

Consumption of Added Sugars Up 32 Pounds Per Person Since 1970

Per capita consumption of caloric sweeteners (dry-weight basis)—mainly sucrose (table sugar made from cane and beets) and corn sweeteners (notably high-fructose corn syrup, or HFCS)—increased 34 pounds, or 28 percent between 1982 and 1997 (fig. 5a). In 1997, each American consumed a record average 154 pounds of caloric sweeteners. That amounted to more than two-fifths of a pound—or 53 teaspoonfuls—of added sugars per person per day in 1997. USDA's Food Guide Pyramid suggests that people consuming 1,600 calories limit their intake of added sugars to 6 teaspoons per day. The daily suggested limit increases to 12 teaspoons for those consuming 2,200 calories, and to 18 teaspoons for those consuming 2,800 calories.

A striking change in the availability of specific types of sugar occurred in the past two decades. Sucrose's share of total caloric sweetener use dropped from 83 percent in 1970 to 43 percent in 1997, while corn sweeteners increased from 16 percent to 56 percent. All other caloric sweeteners—including honey, maple syrup, and molasses—combined to maintain a 1-percent share.

The steep rise in caloric sweetener consumption since the mid-1980's

coincides with a 47-percent increase in annual per capita consumption of regular (nondiet) carbonated soft drinks, from 28 gallons per person in 1986 to 41 gallons in 1997 (that amounts to 14.5 ounces per person per day, an amount that contains 11 teaspoonfuls of sugar) (fig. 5b). Carbonated soft drinks now provide more than a fifth of the refined and processed sugars in the American diet. USDA's 1994-96 Continuing Survey of Food Intakes by Individuals found that only two-fifths of the population including nearly a quarter of children 5 years and under drink regular carbonated soda, suggesting that the typical nondiet soda consumer 6 years and over drinks and/or wastes the equivalent of three or more cans of regular soda a day.

Convenience and Health Concerns Behind Big Hike in Grain Consumption

Per capita use of flour and cereal products—excluding quantities used in alcoholic beverages and fuel—reached 200 pounds in 1997 from an annual average of 145 pounds in 1980 and 136 pounds in 1970 (fig. 6a). The expansion in supplies reflects ample grain stocks, strong consumer demand for variety breads and other instore bakery items as well as grain-based snack foods, and increasing fast-food sales of products made with buns, doughs, and tortillas. Yet this consumption level is far below the 300 pounds consumed per person in 1909 (the earliest year for which data are available) (fig. 6b). In 1909, the major source of protein in the American diet was grain products. In 1998, it is meat, poultry, and fish. In addition, Americans are still eating a serving or less a day of whole-grain foods, far below the minimum three per day the American Dietetic Association recommends.

As in the case of fruits and vegetables, four-fifths of the increase after 1970 occurred since 1982, the year of the landmark *Diet, Nutrition, and Cancer* report. The 52-pound increase between 1982 and 1997 occurred even as prices for cereal and bakery products rose much faster than prices for most other grocery foods (fig. 4b). The rise in consumption is attributed to the quest for increased fiber in the diet, to aggressive advertising and health claims by food processors, and to the convenience of many of these foods.

Wheat is the major grain product eaten in the United States, with wheat flour and other products representing 75 percent of total grain consumption in 1997. However, wheat's share of total grain con-

sumption has declined 7 percentage points since 1970, as rice, corn, and oat products have gained momentum. Consumption of wheat flour in 1997 was 150 pounds per person, up 35 percent from 1970.

Consumption increased for other cereal products as well. Per capita use of corn products (corn flour, corn meal, hominy, grits, and starch) more than doubled between 1970 and 1997, to 23 pounds per capita. Per capita use of rice and oat products (rolled oats, ready-to-eat cereals, oat flour, and oat bran) climbed 191 percent and 38 percent from 1970 to 1997. In contrast, consumption of rye flour and barley products (barley flour, pearl barley, and malt and malt extracts used in food processing) has continued to decline.

Between 1970 and 1997, consumption of breakfast cereals increased 64 percent to 17 pounds per capita.

Consumption of ready-to-eat and ready-to-cook cereals in 1997 was 14.3 pounds and 2.6 pounds, compared with 8.6 pounds and 1.7 pounds in 1970.

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Have We Turned the Corner on Fat Consumption?

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Fat consumption in the United States is one of the most closely watched and frequently reported on aspects of our diet. The concern with fat intake is clearly reflected in the nutrient content claims on the labels of new food products recently introduced on the market. Beginning in 1992, the number of new products making claims of “reduced/low fat” exceeded similar claims about calorie content. Between 1993 and 1996, the number of new products making claims of “reduced/low fat” exceeded the combined number of claims about calories, sugar, cholesterol, salt, fiber, or calcium content. Even this sharp contrast understates the emphasis on fat content, since a new product may carry more than one nutrient claim.

Fat consumption, or the fat content of the food supply, is comprised of fat from all sources—“naturally occurring fat,” in such foods as meats, dairy products, eggs, and nuts, and “added fats,” which are used in cooking as table spreads, and in the manufacture of food

products, such as baked goods, salad dressings, and potato chips. It is the consumption of these added fats that are reported by USDA’s Economic Research Service (ERS) and that are presented here.

The U.S. Department of Agriculture maintains extensive data on the supply and disposition of fats and oils produced and consumed in the United States. In addition, the U.S. Department of Commerce conducts monthly surveys of firms that produce fats and oils and products made from these fats and oils in order to ascertain output and stocks of these products. When combined with information on trade in these items, these data permit the development of supply and use balance sheets for fats, oils, and products. These data are reported in an annual publication by ERS, which also calculates and reports per capita added-fat consumption.

While the data are generally used to indicate consumption, there is currently no direct measure of the amount of fats and oils that comprise an undoubtedly large “waste” category—that is, fats and oils used in food preparation (such as deep frying) and then discarded. Thus, there is no way to measure actual levels of fat ingested. These data nonetheless are widely monitored as a measure of fats and oil consump-

tion in the United States. From a supply perspective, the data are a direct measure of the amount of fats and oils needed in the United States for edible food use and that must be provided from either domestic sources or imported.

Since data have been collected on the subject, annual U.S. per capita consumption of fats and oils has continually increased over the years (table 1). The principal sources of added food fat in our diet include butter, margarine, salad and cooking oils, shortening, and animal fats, such as lard and edible tallow. Sources like margarine, salad and cooking oil, and shortening are comprised of a combination of individual vegetable oils or animal fats. Over time, the relative contribution of individual edible product categories to total fat intake and the types of fats and oils used in these products have changed. But whatever the source or form, Americans have consumed ever more fat.

We identified several important events and long-term trends in Americans’ fat intake and in the U.S. fats and oils economy:

- In 1933, U.S. butter production peaked at 2.38 billion pounds, marking the beginning of the end of its dominance of per capita added-fat consumption. In 1933, per capita butter consumption topped 18 pounds (39 percent of

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total added fat consumed) compared with 1997's 4.2 pounds (6 percent of all added fat consumed).

- In 1953, soybean oil consumption exceeded that for lard, displacing

lard as the largest single source of fats and oils in the American diet. This began an uninterrupted trend that has led to soybean oil's overwhelming dominance in the fats and oils economy. In 1953,

soybean oil use was 2.1 billion pounds; in 1997, it was 12.4 billion pounds, or 82 percent of all added fats and oils used.

- In 1973, per capita consumption of salad and cooking oils

Table 1
U.S. Per Capita Consumption of Added Fats and Oils¹

Year	Table spreads			Baking and frying fats			Salad, cooking, and other edible oils	Total
	Butter	Margarine	Total	Lard and tallow ²	Shortening	Total		
Pounds								
1960	6.1	7.5	13.6	7.5	12.6	20.1	11.5	45.2
1961	6.0	7.5	13.5	7.6	12.9	20.4	11.2	45.1
1962	6.0	7.3	13.4	7.1	13.4	20.5	11.7	45.6
1963	5.7	7.6	13.2	6.3	13.5	19.8	13.2	46.3
1964	5.7	7.7	13.3	6.2	13.8	20.0	14.2	47.5
1965	5.3	7.8	13.2	6.3	14.2	20.5	14.1	47.7
1966	4.6	8.5	13.1	5.5	16.0	21.4	15.1	49.6
1967	4.4	8.4	12.8	5.3	15.9	21.3	15.1	49.2
1968	4.7	8.5	13.2	5.5	16.3	21.8	15.9	50.9
1969	4.5	8.6	13.1	5.0	17.0	22.0	16.5	51.6
1970	4.3	8.7	13.0	4.6	17.3	21.9	17.7	52.6
1971	4.1	8.7	12.9	4.2	16.8	21.0	17.9	51.8
1972	4.0	8.9	12.9	3.7	17.6	21.4	19.1	53.4
1973	3.8	8.9	12.7	3.3	17.0	20.4	20.3	53.3
1974	3.6	8.9	12.5	3.2	16.9	20.1	19.8	52.4
1975	3.8	8.8	12.6	3.2	17.0	20.2	19.9	52.6
1976	3.5	9.5	13.0	2.9	17.7	20.6	21.5	55.1
1977	3.4	9.1	12.5	2.5	17.2	19.8	21.0	53.3
1978	3.5	9.0	12.5	2.4	17.8	20.2	22.2	54.9
1979	3.6	8.9	12.5	2.9	18.4	21.3	22.5	56.4
1980	3.6	9.0	12.6	3.6	18.2	21.8	22.7	57.2
1981	3.4	8.9	12.3	3.5	18.5	21.9	23.2	57.4
1982	3.5	8.8	12.3	3.8	18.6	22.4	23.5	58.3
1983	3.9	8.3	12.2	4.1	18.5	22.6	25.1	60.0
1984	3.9	8.3	12.2	3.8	21.3	25.0	24.2	61.5
1985	3.9	8.6	12.5	3.7	22.9	26.6	25.2	64.3
1986	3.7	9.1	12.8	3.5	22.1	25.6	26.1	64.5
1987	3.7	8.4	12.1	2.7	21.4	24.1	26.9	63.1
1988	3.6	8.3	11.8	2.6	21.5	24.1	27.6	63.5
1989	3.5	8.1	11.6	2.1	21.5	23.5	25.7	60.8
1990	3.5	8.7	12.2	2.4	22.2	24.7	26.0	62.8
1991	3.5	8.5	11.9	3.1	22.4	25.5	28.0	65.4
1992	3.5	8.8	12.3	4.1	22.4	26.5	28.6	67.4
1993	3.7	8.9	12.6	3.9	25.1	29.0	28.5	70.2
1994	3.9	7.9	11.8	4.7	24.1	28.9	27.9	68.6
1995	3.6	7.4	11.0	4.9	22.5	27.4	28.5	66.9
1996	3.5	7.3	10.8	5.3	22.3	27.5	27.5	65.8
1997	3.3	6.9	10.2	4.7	20.9	25.6	29.8	65.6

Notes: ¹Fat content basis. ²Direct use; excludes use in margarine and shortening.

exceeded that for shortening for the first time, making it the leading source of added fat in the diet, a trend that continues.

- If the recent patterns in added-food-fat consumption continues, 1993 may be included in this list of 20-year hallmarks in the U.S. food fat economy.

U.S. Added-Fat Consumption Drops Sharply

In 1993, U.S. per capita consumption of shortening reached an all-time high of 25.1 pounds (table 1). Also in that year, both the margarine and other edible use categories reached their highest level since the mid-1980's, before declining continuously through the mid-1990's. In 1992, consumption of salad and cooking oil peaked at a then all-time high of 27.2 pounds and commenced a decline that lasted through 1996.

In 1997, per capita consumption of salad and cooking oil jumped a remarkable 2.6 pounds, as some manufacturers increased the fat content of their reduced-fat product lines. Despite this large increase for salad and cooking oil, continuing declines in all other categories more than offset the increase so that per capita added-fat consumption in 1997 actually declined from the 1996 level. For the first third of 1998, total use of added fats and oils in all categories, including salad and cooking oils, were down from the same period a year earlier. The net effect of these movements was to reduce per capita added-fat consumption by 4.6 pounds from its 1993 peak of 70.2 pounds to 65.6 in 1997, the most recent year for which final data are available.

In the late 1980's two government reports—the 1988 Surgeon General's

Report on Nutrition and Health, and the 1989 National Research Council's *Diet and Health: Implications for Reducing Chronic Disease Risk* concluded that evidence substantiated an association between diet and the risk of chronic disease. Both reports recommended that Americans reduce their intake of fat. Recent data suggest that per capita fat consumption has declined, which could bode well for consumers' health if the pattern continues. *The Dietary Guidelines for Americans*, which represent Federal dietary recommendations, further emphasize the importance of reducing fat intake (USDA/DHHS). On the other hand, lower consumption of fats and oils may not be particularly good news for the U.S. farm sector.

Added-fat consumption in 1997 would have been 1.23 billion pounds higher if per capita use had remained at 1993's level and not fallen to 65.6 pounds. If soybean oil's share of this higher use level had mirrored its actual 1997 share of the market at 82 percent, 1997 soybean oil use could have totaled 298 million pounds above its actual 12.42 billion pounds. Using an average soybean oil yield of 11.2 pounds per bushel of soybeans crushed suggests that domestic edible soybean oil use was, on a bushel-crushed equivalent basis, about 26.6 million bushels less than it would have been if per capita fat consumption had not declined. This is roughly the equivalent production of 672,000 harvested acres of soybeans at current national average yields.

Most of the U.S. supply of added fats and oils comes from the domestic crushing of oilseeds, primarily soybeans, to produce protein meal, which is fed to livestock. Livestock production also directly influences the supply of animal fats, such as, butter, lard, and edible tallow. U.S. poultry and pork production are the major consumers of protein meal,

and each has been expanding rapidly in recent years. Annual U.S. soybean crush has set records in six of the last eight seasons. With U.S. vegetable oil output and animal fat production largely determined by a meal-driven crush and meat demand, the United States generally produces more fats and oils each year than it consumes domestically and exports the surplus. A declining domestic demand for added fats and oils may lead to greater exports. However, if export demand is not able to absorb the surplus, domestic supplies could build, with the potential to depress prices for fats and oils, shrink domestic crush margins, and eventually show up as lower farm prices for U.S. oilseed and livestock producers.

Downturns in per capita added-fat consumption are not unusual and can usually be attributed to fluctuations in prices and income levels. Past downturns have usually been modest and of short duration, with consumption quickly rebounding and returning to trend levels. The downturn since 1993 has been sharp and broad based. All categories of domestic edible use have been affected. This downturn raises the issue of whether added-fat consumption has significantly shifted, or whether the downturn is the result of normal variation in general economic factors. If consumption has shifted, effects on the U.S. fats and oils economy could be significant. The fundamental factors that influence per capita consumption of added food fat need to be analyzed to fully assess the situation.

What Influences Added-Fat Consumption?

Several factors have been identified to influence the level of per capita consumption of added food fat. Chief among them are (1) the relative level of fats and oils prices

versus overall prices, and (2) per capita disposable income. Specifically, as the price of fats and oils increases relative to overall consumer prices, the per capita consumption of fats and oils declines. Conversely, as consumer disposable income increases, fats and oils consumption rises (Hazera). In addition, consumer concerns about fat intake and new mandatory nutrition labels on packaged foods were expected to motivate food manufacturers to reduce the fat content of their food products. With the introduction of reduced/low-fat products, it seemed likely that fat consumption would decline.

Building on previous research, we conducted a new analysis that included, in addition to prices and income, variables to assess the impact of new food labeling regulations and product nutrient content characteristics on fat consumption. The analysis sought to determine what influence, if any, consumer concern about fat intake and the new food labeling legislation might have on fat consumption.

The analysis determined that, while traditional price and income effects still apply to the more recent pattern of food fat consumption, the number and proportion of new food products bearing a reduced/low-fat nutrient content claim also play an important role in explaining fat consumption. Specifically, as the proportion of new food products carrying a reduced/low-fat claim on the label rises by 1 percent each year, per capita food fat consumption declines by 0.024 percent. Additionally, as the total number of food products introduced since 1993 bearing a reduced/low-fat nutrient claim rises by 1 percent, per capita food fat consumption declines by 0.013 percent (Sanford and Allshouse, forthcoming).

Implications for Future Added-Fat Consumption

Per capita added-fat consumption in 1997 fell to 65.6 pounds from 65.8 in 1996, marking an unprecedented fourth consecutive year of decline. With population gains between 1996 and 1998, total added-fat consumption over the period is forecast to stagnate, or increase very slightly, even as per capita consumption declines. However, if declines in per capita added-fat consumption approach 1993-97 levels, total annual added-fat consumption could decline by 135 million pounds. Per capita added-fat consumption in 1998 is forecast to fall to 65.3 pounds.

The potential for declines in domestic use of edible fats and oils comes at a time when potential domestic production of these fats and oils is forecast to surge to record levels. Current USDA estimates of domestic output of the major edible fats and oils in 1997 and 1998 are 25.2 and 25.6 billion pounds, well ahead of the previous record output of 23.6 billion in 1994. U.S. exports of fats and oils in 1997 and 1998 are also forecast to reach their highest levels ever, at 6.0 and 5.9 billion pounds. The potential for continuing production increases and stagnant or declining domestic use could place the United States in the position of increasing dependence on export markets to maintain a balance in domestic supplies of fats and oils.

New Technology May Change the Picture

To reduce fat consumption, a person may choose to eat less of a particular food or replace the food in their diet with a lower fat substitute. For consumers wishing to consume the same amount of a particular food item, the only way to reduce fat consumption is to reduce the

amount of fat in the food itself. Several well-documented approaches to reducing a food's fat content include fat trimming of meat cuts, selective breeding for leaner animals, or the use of fat substitutes.

In the past, the most common fat substitutes were derived from non-fat components—namely, carbohydrates or proteins (Morrison, 1992). These techniques reduced not only the food's fat content but also the amount of fats and oils required in the food's preparation.

While in development for several years, the recent appearance on the market of food products that use advances in fat-substitute technology may be particularly well timed. Heralded as a way for consumers to reduce fat intake without giving up foods they desire, the technology also increases the amount of oils required in the food's manufacture, a definite plus for the farmer. If these products are successful in the market, the potential result is a rare win-win outcome for both producers and consumers of fats and oils.

These new food products use a fat-based fat substitute known as olestra. Unlike fat substitutes that use proteins or carbohydrates in their manufacture, olestra starts from vegetable oil. According to Stanton's assessment of near-term developments in the fat substitute area, "... olestra could have a major effect in almost all food sectors."

Olestra is the name of a noncaloric sucrose polyester described in a 1971 patent assigned to Procter & Gamble (P&G), a company based in Cincinnati, Ohio, which had been developing the product since its 1968 discovery. According to P&G, olestra is a food ingredient that brings the flavor and desirable texture of fats and oils to food without adding any fat or calories. This is attributable to olestra's

unique characteristics. It is heat-stable at high temperatures, which permits its use in frying, and it is nondigestible, thus adding no calories or fat to food. In 1987, P&G petitioned the U.S. Food and Drug Administration (FDA) for permission to use olestra in shortenings and oils for home and commercial use. In its petition, P&G proposed using olestra up to 35 percent of a blend in shortening and oils used at home and by foodservice personnel. Also, P&G sought olestra use up to 75 percent in commercial deep frying of snack foods, like potato chips (Morrison, 1992). Then, in 1990, the petition was amended to seek use of olestra in snacks only, but at 100 percent.

In January 1996, FDA approved the use of olestra in salty snacks, at which time olestra had been in development and testing for 25 years. P&G decided to brand the ingredient, "Olean." The current approval allows Olean to be used in snack chips and crackers, with any other use requiring separate FDA review and approval. While currently used only in these salty snacks, P&G maintains that Olean could also replace the fat in shortening and oil, ice cream, salad dressings, and cheese. Even when restricted to the salty snack market, P&G estimates that Olean could replace 774,000 tons (6 pounds per person) of actual fat intake in the U.S. each year, if all 5.6 billion pounds of salted snacks eaten annually (21 pounds per person) were produced with Olean.

Initial use of Olean is in snack foods, such as potato chips, tortilla chips, cheese puffs, and crackers. Frito-Lay opened the test market for snack foods in April 1996 with its Lay's, Ruffles, Doritos, and Tostitos brands. In September 1996, P&G introduced Fat Free Pringles with Olean to the market. R.J.R. Nabisco

also introduced products to test markets in March 1997 with their Nabisco Wheat Thins and Ritz Crackers. Throughout 1996 and 1997, test marketing was limited to a few selected cities.

Procter & Gamble began advertising Olean in February 1998. The commercials, aired during the Winter Olympics, explained what Olean is and its benefits. The company also announced that a variety of snacks fried with Olean would be available nationwide by summer. While the product is heralded for its potential to reduce fat intake, its producer, P&G, and FDA have tested the product extensively to assess potential gastrointestinal effects and the product's tendency to absorb certain vitamins. On June 17, 1998, the FDA completed a planned 30-month review, from its January 1996 approval date, and concluded that there were no significant adverse digestive or nutritional health effects associated with Olestra's use in salty snacks. However, FDA also required products containing Olestra to be labeled with information about the potential for gastrointestinal symptoms and adverse effects on nutrient absorption.

Not Just Good News for Consumers

As promising as the potential is for consumers to reduce fat intake with this product, Olean also is a plus for U.S. vegetable oil producers. To produce Olean, P&G constructed a new plant in St. Bernard, Ohio, with the capacity to provide a national supply of the new cooking oil. The plant began shipping Olean to snack food makers in January 1998.

Advertising by P&G for its Olean product has featured soybeans and soybean farmers, highlighting the potential positive impact of the product for these farmers. However,

a substantial proportion of the vegetable oil used in the production of Olean is from cottonseed. This would logically stem from the focus on chip frying, particularly potato chips, and cottonseed oil's preeminent status as a preferred oil in this application. For cottonseed oil producers, a particularly attractive aspect of the Olean production process is the vegetable oil input requirement. In order to produce a pound of Olean, the process requires approximately 1.2 pounds of vegetable oil. Thus, aside from any potential consumption increase of cottonseed oil-containing food products that may arise from the reduced-fat attributes imparted by Olean, simply replacing the current level of cooking oil use with Olean will require about 20 percent more cottonseed oil than would have been used otherwise.

The potential for this technology to boost the value of cottonseed oil and the value of the cotton crop to producers is especially important in the current market environment. In the past, U.S. cotton producers have often focused on the profitability of the lint portion of their crops, with the associated cottonseed production receiving less attention in their production and marketing plans. However, since the 1996 Farm Bill, which dramatically increased the influence of market forces on producers' farming plans, cotton producers have become increasingly concerned about the profitability of cotton planting versus alternative crops. To stem declining U.S. cotton planted area and interest in cotton production, the industry has begun to emphasize the importance of reducing production costs and increasing the farm value of the cotton crop—and not just the lint portion of production, but also the value of the cottonseed. The recent appearance of Olean in the food market and the associated produc-

tion technology complements this focus on increasing the cotton crop's value and competitiveness with alternative crops.

Increasing Per Capita Fat Disappearance, but Declining Consumption

The technological advance represented by Olean highlights the difficulties of measuring fat consumption with the data currently available. Since the data are a measure of the amount of fats and oils used in the manufacture of edible products, a process such as that required to produce Olean could give the appearance of rising per capita fat consumption, when the product actually serves to reduce the amount of fat digested.

In the absence of the fat-substitute technology represented by such products as Olean, the data on per capita disappearance, while not a measure of fat consumption, have

traditionally given an accurate indication of trends in fat consumption. If future calculations of per capita disappearance indicate continued declines, and 1993 was indeed a high watermark for that indicator, then it may be inferred that actual fat consumption is similarly in decline. If, however, per capita disappearance should reverse and begin to rise, inferences about actual fat consumption will be much more difficult to make due to the appearance in the market of products like Olean.

For those concerned with the production of fats and oils and ensuring an adequate supply for domestic edible use, the inferences to be drawn from the disappearance data are much more direct. If the downturn in per capita fat consumption since 1993 persists in coming years, then the domestic edible fats and oils economy will be in decline and will likely depend increasingly on export markets in the face of predicted record domestic production.

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Spotlight: National Food Spending

Spending for Food Increased Almost 4 Percent in 1997

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Food spending in the United States rose 3.9 percent to \$714.9 billion between 1996 and 1997 (table 1). Total expenditures for eating out (food away from home) also rose 3.9 percent, to \$320.3 billion in 1997. This increase is higher than the 2.8-percent rise in 1996. Retail food expenditures (food at home) also increased at a slightly higher pace than in 1996, up 3.8 percent to \$394.6 billion. Once adjusted for inflation, which was a low 2.3 percent in 1997, total food spending rose 3.5 percent in 1997—food at home was up 3.8 percent and food away from home rose 2.9 percent.

Also in 1997 (table 1), there was a significant increase in food donations, with the amount from food-stores, farmers, manufacturers, and wholesalers up 2.8 percent from 1996, while supplies and food donated from eating and drinking places increased 3.2 percent.

The slower real (inflation-adjusted) growth for food away from home than for food at home in 1997 is unusual in a nonrecessionary year. During the 1990-91 recession, for example, real spending on food

away from home declined 0.4 percent, while spending for food at home rose 1.3 percent. One of the ways people economized during the recession was by eating out less often or by going to less expensive places. The share of total food dollars spent away from home declined from 44.7 percent in 1989 to 44.1 percent in 1991, reflecting the economic slowdown and the subsequent recession.

But with the subsequent economic recovery came increased spending on food away from home. In 1992, 1993, and 1995, spending for food away from home rose faster than that for food at home (in 1994, spending for both categories increased at the same rate). By 1995, spending for food away from home had reached new highs—46 percent of food expenditures and 35 percent of food quantities.

In 1997, the share of food dollars spent away from home dipped slightly to 44.8 percent. However, that may not show the complete picture. Counted in at-home food expenditures is the latest trend in foodservice—Home Meal Replacement (HMR), or meal solutions. Supermarkets are exploring HMR, which are fully or partially prepared foods, to compete with their fast-food and restaurant rivals.

HMR's main competition may be "meal deals." Made popular by fast-food establishments after the 1990-91 recession, meal deals are a combination of food and beverage items (such as hamburger, french fries, and soda) sold below the price of each item being purchased separately. For the first time in 22 years, meal deals available from restaurants and fast-food establishments are on the decline. According to a 1997 study, *Consumer Reports on Eating Share Trends*, only 27 percent of restaurant purchases were on a meal deal basis, while fast-food meal deals fell to 30 percent of all fast-food meals purchased in 1997.

Preliminary figures on total food sales (a beginning point for estimating food spending) in 1998 show spending for food at home up 1.7 percent from the same period in 1997 and spending for food away from home up 1.0 percent. Food sales exclude donations and food furnished to employees, patients, and inmates—all of which are included in the total food expenditures reported above. Inflation-adjusted food sales from 1997 to 1998 decreased 0.1 percent for food at home, while sales for food away from home fell 1.5 percent.

The author is an economist with the Food and Rural Economics Division, Economic Research Service, USDA.

Table 1
Food Spending Rose 3.9 Percent in 1997

Expenditures	1993	1994	1995	1996	1997	Change, 1996-97
	Billion dollars					Percent
Total food and beverages ¹	693.5	723.9	750.2	779.2	809.4	3.9
Total food (excluding alcohol)	610.6	638.8	663.0	688.3	714.9	3.9
At-home food	332.1	349.1	364.7	380.1	394.6	3.8
Sales	325.3	341.9	357.6	372.9	387.2	3.8
Home production and donations	6.8	7.2	7.1	7.2	7.4	2.8
Away-from-home food	278.5	289.7	298.3	308.2	320.3	3.9
Sales	252.8	263.2	271.2	280.3	291.4	4.0
Supplied and donated ²	25.7	26.5	27.2	27.9	28.8	3.2
Alcoholic beverages	82.9	85.1	87.2	90.9	94.5	4.0
Packaged	46.0	47.6	48.2	50.1	51.9	3.6
Drinks	36.9	37.5	39.0	40.8	42.6	4.4

Notes: Data may not total due to rounding. ¹Includes all food and alcoholic beverages, regardless of who paid for them. ²Includes government subsidies for school lunch programs. Source: Data are from USDA's Economic Research Service.

Table 2
Rise in Personal Food Expenditures Lower Than Increase in Disposable Personal Income¹

Component	1995	1996	1997	Change, 1996-97
	Billion dollars			Percent
Disposable personal income	5,355.7	5,608.3	5,885.2	4.9
Total personal consumption expenditures	4,957.7	5,207.6	5,485.8	5.3
Food	583.1	606.2	629.4	3.8
At home	360.4	376.0	390.3	3.8
Away from home	222.6	230.1	239.1	3.9
Alcoholic beverages	73.2	76.2	79.2	3.9
At home	48.2	50.1	51.9	3.6
Away from home	25.0	26.1	27.3	4.6
Nonfood	4,613.2	4,850.2	5,114.6	5.5
Housing, household supplies, fuel, furniture	1,382.6	1,451.9	1,521.1	4.8
Transportation, cars, gasoline	572.3	602.3	624.3	3.7
Medical care, drugs	858.5	899.0	952.2	5.9
Clothing, shoes, toiletries, personal care, jewelry	356.0	370.3	388.0	4.8
Recreation, tobacco, toys, sporting goods, pet food	304.5	326.4	354.6	8.6
Personal business	389.1	421.1	465.0	10.4
Other	344.5	357.4	371.2	3.9

Notes: Data may not add due to rounding. Food expenditures in this table are only those paid for by consumers with cash or food stamps. Disposable personal income is the sum of personal consumption expenditures plus savings plus other miscellaneous expenditures. ¹As of May 26, 1998. Sources: Food and alcoholic beverage data are from USDA's Economic Research Service. All other data are from the Bureau of Economic Analysis, U.S. Department of Commerce.

Personal Food Spending Posted Modest Increase

Personal food spending shows another perspective on the trend. It differs and behaves differently from total food spending because it excludes expenditures by governments and businesses (such as prisons, military messes, business travel, and entertainment), which are for food away from home.

Personal food expenditures rose 3.8 percent in 1997, while spending on recreation went up 8.6 percent, and medical care and drug expenditures increased 5.9 percent (table 2). Lower fuel prices in 1997 contributed to an increase of only 3.7 percent for personal spending on transportation, cars, and gasoline. Within personal food expenditures, spending for food away from home grew 3.9 percent, compared with a

3.8-percent increase in expenditures for food at home.

In 1997, 10.7 percent of household disposable personal income was spent on food, down from 12.0 percent in 1985. Households spent 6.6 percent of their 1997 disposable personal income for food at home and 4.1 percent on food away from home. (A decade earlier, Americans were spending 7.5 percent of their disposable personal income for food at home and 4.3 percent for food away from home.) In 1997, Americans spent about 26 percent of disposable personal income on housing (including supplies, fuel, and furniture), 16 percent on medical care and drugs, and 11 percent on transportation (including cars and gasoline). ■

Updated Data Available

Newly revised figures will be available from USDA's Economic Research Service twice a year—spring and fall—through the AutoFAX system.

To receive updates by AutoFAX, dial (202) 694-5700 by telephone connected to a FAX machine, respond to the voice prompts, and order document #11530 (a list of all the available data tables can then be requested).

Please note, some fax machines may have a "Hook" or "Manual polling" button or switch that allows the user to respond to the

recorded voice prompts. On this type of fax machine you may listen to the voice prompts through a speaker and respond on the keypad. It may be necessary to press the start or send button to send the signal to the AutoFAX.

When responding to the voice prompts, please note: when asked for a yes or no response, press 1 for yes and 2 for no. You may interrupt the main menu choices to order the document by pressing 4—the system will then prompt you for the document number.

Marketing Bill Rose, While Farm Value Declined in 1997

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Consumers spent \$561.1 billion on domestically produced food in 1997, \$14 billion more than in 1996 (table 1). This amount was less than the total consumers spent for all food because it excluded expenditures for imported foods and seafood (for total food spending, see "Spotlight: National Food Spending," elsewhere in this issue). Consumer expenditures for domestic farm foods in 1997 rose approximately 2.6 percent. This increase was smaller than both the 3.2-percent rise of 1996 and the 4.1-percent average annual increase of the last decade.

The amount spent on food reflects two main components: the farm value and the marketing bill. The farm value is a measure of the payments farmers receive for their raw commodities used in food purchased by consumers at foodstores and eating places. The marketing bill represents the difference between the farm value of food produced on U.S. farms and the final costs to consumers. Labor, packaging, transportation, and energy are among the many costs incurred in processing agricultural commodities into food and bringing them from the farm to the dinner table.

Lower Farm Value in 1997

For every dollar spent on food, 21 cents covered farm costs. The farm value dropped \$2.2 billion in 1997—the first decrease since 1991. The lower value reflected lower farm prices, which offset abundant supplies of beef, pork, dairy products, poultry, eggs, and grains.

The share of the retail price accounted for by the farm value varies widely among foods. It is generally larger for animal products

than for crop-based foods, and smaller for foods that require considerable processing and packaging. That is, the percentage generally decreases as the degree of processing increases. For example, the farm value of meat was 36 percent in 1997, but only 7 percent for cereal and bakery products. The farm inputs needed to feed, house, and maintain the health of livestock are greater than those required to grow crops, and there are fewer manufacturing processes required for meats.

Table 1
Labor Costs Are the Largest Share of Food Expenditures

Component	1980	1985	1990	1996	1997
<i>Billion dollars</i>					
Labor ¹	81.5	115.6	154.0	204.6	216.2
Packaging materials	21.0	26.9	36.5	47.7	48.7
Rail and truck transportation ²	13.0	16.5	19.8	22.9	23.6
Fuels and electricity	9.0	13.1	15.2	19.6	20.0
Pretax corporate profits	9.9	10.4	13.2	19.2	18.4
Advertising	7.3	12.5	17.1	20.6	21.0
Depreciation	7.8	15.4	16.3	19.6	20.1
Net interest	3.4	6.1	13.5	12.1	13.0
Net rent	6.8	9.3	13.9	20.4	21.0
Repairs	3.6	4.8	6.2	8.2	8.4
Business taxes	8.3	11.7	15.7	19.7	20.2
Total marketing bill	182.7	259.0	343.6	424.5	441.4
Farm value	81.7	86.4	106.2	122.2	120.0
Consumer expenditures	264.4	345.4	449.8	546.7	561.1

¹The author is an agricultural economist with the Food and Rural Economics Division, Economic Research Service, USDA.

Notes: ¹Includes employees' wages/salaries and health and welfare benefits.

²Excludes local hauling charges.

Aside from livestock and poultry products, most foods entail fewer inputs at the farm level, but more processing, transportation, wholesaling, and retailing costs, which tend to hold down the farm value.

Marketing Bill Continues To Rise

Marketing costs are by far the largest portion of food expenditures—taking nearly 80 cents of every dollar consumers spent on food in 1997. The cost of providing marketing services beyond the farm gate continues to be the most persistent source of rising food expenditures. The marketing bill grew 3.9 percent (\$16.6 billion) in 1997, following a 2.1-percent rise in 1996. This increase was larger than the 1997 general inflation rate of 2.3 percent, the reverse of the situation recorded in 1996. This was the largest growth in marketing costs in both absolute dollars and percentage terms since 1994. The 1997 rise was the result of a modest drop (1.8 percent) in the farm value, coupled with a somewhat larger rise (2.6 percent) in consumer food expenditures.

While the marketing bill rose higher than the 3.6-percent average annual increase of the rest of the

1990's, moderate inflation continued to restrain marketing cost increases. Recent increases in the bill are much smaller than during periods of rapid inflation, such as the late 1970's, when marketing costs gained as much as 13 percent in a single year. That compares to a 14.7-percent total rise between 1993 and 1997.

The marketing bill increases every year (fig. 1), largely reflecting rising costs of packaging and other processing and marketing inputs—especially labor.

Labor Costs Exert Largest Influence on Marketing Costs

As the largest component of the marketing bill, labor costs (wages and salaries, and employee benefits, such as health insurance) constituted 38.5 percent of total consumer food expenditures (fig. 2). Labor costs grew more than any other cost component—up about 5.7 percent in 1997, higher than the 5.2-percent average annual rise of the last decade. This rate primarily reflected higher average hourly earnings, which outpaced those for food manufacturing, wholesaling, and restaurant employees in 1997. Slower rises in the cost of benefits and a slower

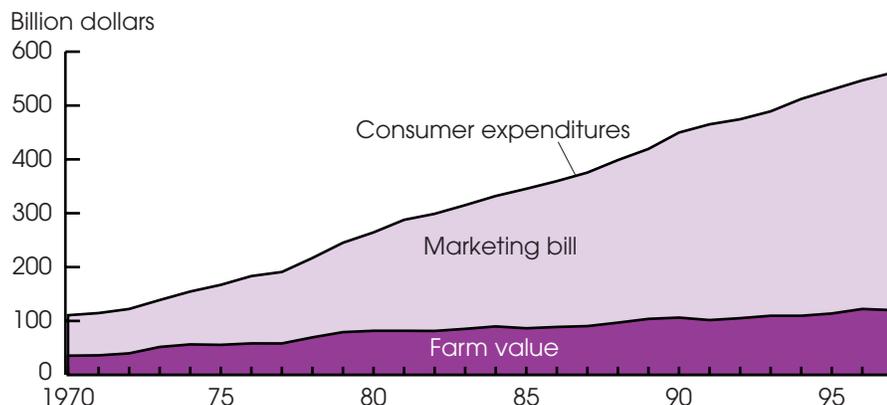
increase in hiring rates mitigated these increases.

Hourly earnings of food manufacturing employees rose 2.6 percent in 1997, slightly higher than in 1996. Average hourly earnings of foodstore workers rose 2.3 percent, compared with 3.1 percent in 1996. Wage increases in these two sectors continue to reflect union contract provisions negotiated during the last few years. Meanwhile, average hourly earnings of wholesaling employees rose 3.3 percent, about the same as in 1996. The average hourly earnings of foodservice employees advanced at the fastest pace of any food industry sector at 4.5 percent, compared with 3.6 percent in 1996. This higher growth rate reflects the federally legislated increase in the minimum wage to \$5.15. The foodservice sector has both the largest workforce and the highest proportion of minimum-wage employees of the food industry.

Food industry employment increased 1.3 percent in 1997, smaller than the 1.9-percent rise recorded in 1996. This smaller rate of increase reflects flat retail sales, whose impact has reverberated throughout the food marketing sector. In 1997, 13.7 million people were employed in the food sector beyond the farm. About 25 percent worked in foodstores, 12 percent in food manufacturing, and 7 percent in wholesaling. Eating and drinking places represented the single-largest share, 56 percent. These shares are comparable to trends recorded in recent years.

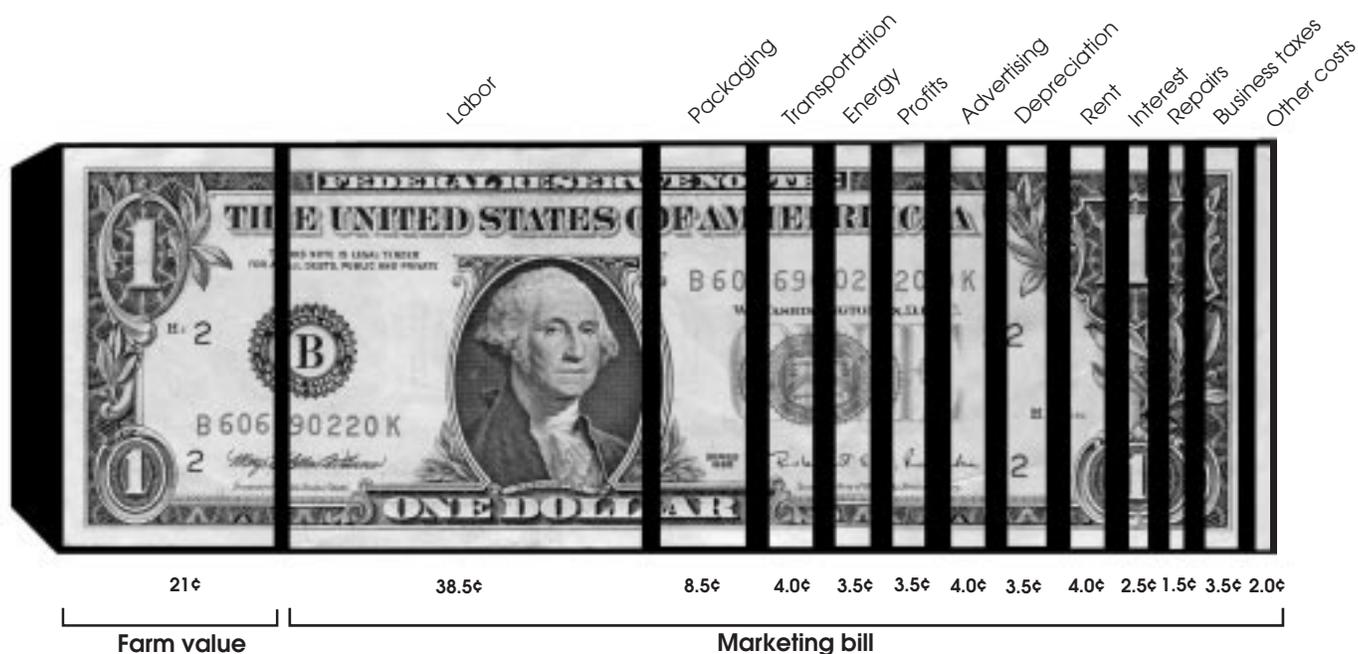
Wage supplements make up about 20 percent of total labor costs. However, the cost of medical care had a smaller impact on labor costs than in recent years. The Consumer Price Index for medical services rose just 2.8 percent in 1997, compared with a 6.1-percent annual average increase over the last 10 years. Similarly, the Bureau of Labor

Figure 1
The Marketing Bill Was 79 Percent of 1997 Food Expenditures



Note: Data for foods of U.S. farm origin purchased by or for consumers for consumption both at home and away from home.

Figure 2
What a Dollar Spent for Food Paid for in 1997



Economic Research Service, USDA.

Statistics Employment Cost Index (ECI) for private industry benefits crept up 2.1 percent in 1997, less than half the 4.6-percent average annual rise of the last decade.

The ECI can be further used to illustrate developments in labor costs. Although benefit costs rose modestly for private industry as a whole, they dropped slightly for foodstores. The ECI for foodstores (the only food industry sector for which data are available) rose 2.4 percent in 1997, smaller than the 1996 gain of 3.6 percent. The 1997 increase in worker compensation included a wage and salary gain of 3.1 percent, also a smaller increase than for 1996. Compensation costs rose less than wages and salaries in 1997 because increases in benefit costs were smaller than gains in wage rates for the first time since 1989, when the ECI series was initiated. Although not reported sepa-

rately, the costs of benefits probably decreased about 0.4 percent in 1997. Lower benefits reflect union contracts negotiated for foodstores which require workers to pay a greater portion of medical care costs.

Labor Productivity Differs Throughout the Food Industry

Labor productivity in food manufacturing industries has risen moderately over the years. The average annual increase in output per unit of labor in seven food manufacturing industries for which data are available was 2.3 percent from 1980 to 1995. These increases generally resulted from higher output and a small decline in hours worked. Labor productivity among food manufacturers has risen most in grain milling, fluid milk, and poul-

try processing. However, productivity has grown erratically for most other food industries, partly because of fluctuating output and business conditions.

In contrast, labor productivity in foodstores declined 1.7 percent in 1995 (the most recent year for which data are available), consistent with the downward trend since 1980. Increased use of labor (as reflected in a 1.8-percent rise in foodstore hiring and a trend toward more labor-intensive services, such as prepared meals) and a small increase in output (as measured by real sales) likely combined to produce productivity declines in 1996 and 1997.

Labor productivity among eating and drinking places rose slightly less than 1 percent in 1995, consistent with higher productivity levels since the mid-1980's. Productivity rose because hours worked increased about 1.4 percent, while output was up 2.3 percent.

Packaging, Transportation, and Energy Costs Continue To Rise

Packaging costs account for 8.5 percent of food expenditures. Greater use of shipping boxes, food containers, and plastic materials pressured packaging costs up, but only 2.1 percent, well below the 5-percent average annual increase of the last decade. The price of paperboard, which accounts for about 40 percent of total packaging expenses, fell 6.0 percent in 1997 for a second consecutive annual decrease. Excess production capacity continued to plague the industry in 1997.

Excess capacity also was a problem for metal can producers, who saw prices decline 1.5 percent for a second consecutive annual decrease. The demand for competing plastic containers (which constitute about 20 percent of total packaging costs) continued to weaken the market for metal cans, as was the case in 1996. Meanwhile, the price of plastic packaging held steady in 1997. Lower oil prices offset higher demand for plastic, which is an oil derivative. The price of glass containers, used largely to enhance product image, also declined in 1997.

Transportation costs accounted for 4 percent of food expenditures, consistent with the trend of recent years. Transportation costs rose 3.1 percent, slightly more than in 1996. This increase was mainly due to higher trucking rates, which increased 2.9 percent in 1997, 0.5 percent higher than the rise in 1996. Labor costs incurred by truckers increased 1.2 percent and accounted for nearly 40 percent of total labor costs. Fuel costs, which accounted for 21 percent of trucking costs,

declined 1.8 percent due to lower crude oil prices. Truckers also incurred higher interest expenses, which jumped 7.5 percent. A variety of miscellaneous costs incurred by truckers (depreciation, licenses, insurance, overhead, and maintenance) rose an average of 1.4 percent in 1997. Meanwhile, railroad rates were only 0.5 percent higher.

Energy costs rose 2 percent in 1997, less than half the 5.3-percent pace recorded in 1996. Energy costs incurred by food marketing firms stem from two primary fuel sources—electricity and natural gas—although the specific composition varies by industry subsector. Energy costs were restrained by a 0.4-percent drop in electricity prices. Even though natural gas prices were boosted 6.8 percent by low inventory levels, electricity is by far the predominant source of energy for the food industry.

Electricity supplies 85 percent of energy consumed in restaurants, and nearly all of the energy used by foodstores. On the other hand, electricity accounts for 55 percent of the energy costs incurred in food manufacturing, with natural gas making up the remaining 45 percent.

Food Industry Profits Drop

Food industry profits decreased 4.2 percent in 1997. This decline was largely due to a 14-percent decline in foodservice profits. Several factors account for the decline. First, keen competition among fast-food chains, coupled with the slow inflationary pace prevailing in the general economy, has made it difficult for restaurants to raise prices. Moreover, the rise in the minimum wage contributed to higher labor costs in this industry, where a large share of employees are paid minimum wage.

Food manufacturers also saw profits decline, which were 14 per-

cent below 1996 levels. Much of this drop was due to accounting losses stemming from restructuring activities at several large processing firms. Meanwhile, profits for super-market firms rose 5.9 percent in 1997, mainly from sales of profitable products, such as prepared convenience foods.

The Remaining Costs

Advertising costs account for about 4 percent of food expenditures, and rose 1.9 percent in 1997—less than half as high as the rise in total food marketing costs. Food manufacturers make up about 51 percent of total food industry advertising expenditures, with foodservice contributing another 27 percent, and food retailing adding another 15 percent.

Business taxes account for another 3.5 cents of the U.S. food dollar. These include property, State, unemployment insurance, and Social Security taxes, but exclude Federal income taxes. Business taxes rose 2.5 percent in 1997. Net interest accounted for only 2.5 percent of total consumer expenditures. The 7.4-percent increase in 1997 interest expenses occurred as a result of increased debt from long- and short-term loans booked during years of rising interest rates (such as 1995). Depreciation, rent, and repairs totaled \$49.5 billion in 1997, accounting for 9 percent of the consumer food dollar. Foodservice establishments continued to incur high property rental expenses, and thus had the highest total of any sector. The foodservice sector incurred about 42 percent of these costs, foodstores made up 27 percent, and manufacturing and wholesaling firms together accounted for the remaining 31 percent. ■

Natural Foods Supermarkets Gaining in Popularity

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Natural foods supermarkets are achieving record growth as they gain acceptance from more and more health-oriented consumers. The outgrowth of the earlier health-food stores, natural foods supermarkets have expanded in size to accommodate all the departments of a traditional supermarket, including prepared foods and meals.

“Natural foods” are minimally processed and free of artificial ingredients, preservatives, and other non-naturally occurring chemicals. Although health and natural foods stores have long existed as a niche market in food retailing, they typically offered a more limited range of health foods and related products, such as nutrition supplements, partly because of their smaller size, but also to meet the needs of customers seeking pesticide-free produce, meatless food sources, or produce for restricted diets.

Natural food supermarkets aim to meet the needs of a broader consumer segment interested in improving the nutritional value of their diet to achieve greater health benefits. Interest in natural and

organic food products has been fueled in part by the increasing awareness of the links between diet and health, rising incomes, and the aging of the “baby-boom” generation born between 1946 and 1964. The larger size of natural foods supermarkets, measured in square feet of floor space, provides greatly expanded variety and accommodates all the departments of a traditional supermarket, including environmentally friendly nonfood products. Prepared foods and meals address the needs of time-pressured households having a preference for natural ingredients. Consumers also benefit from the convenience of knowing that most of the product offerings are either certified organic or are made from natural ingredients.

A Small but Growing Market

According to *Health Food Business Annual Survey of Health Food Stores*, the health food store industry has achieved considerable gains over the past several years, reaching sales of an estimated \$8.4 billion in 1997, up from \$7.6 billion in 1996. Chains such as Whole Foods Market and Wild Oats—the two largest retailers

in the segment—were responsible for an estimated \$2.3 billion in 1997 sales.

Natural foods supermarkets are making significant contributions to the expansion and accessibility of natural foods by pursuing aggressive growth strategies and by opening larger, full-service stores. Prior to the early 1990's, relatively few natural food stores in the United States were large enough to meet the supermarket definition of \$2.5 million or more in annual sales (in 1985 dollars, adjusted for inflation in subsequent years). Retailers were mostly independents operating fewer than 10 outlets in a single city. Since then, the number of multi-store, multicity natural foods supermarket firms has grown. By 1993, Whole Foods Market operated 30 natural foods supermarkets in eight States. In metropolitan Washington, DC, Fresh Fields Markets opened several supermarkets and later opened stores in Chicago, New York, and Philadelphia to number 22 stores by 1996. Mrs. Gooch's Natural Food Markets operated seven stores in the Los Angeles area in 1993.

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Consolidation has since reduced the number of multistore retailers despite rapid sales growth. Wild Oats Markets operated 11 natural foods stores in 1993, and has since grown—largely through acquisitions of other existing operations. In July 1996, it acquired Alalpha's, a chain of 11 natural food supermarkets operating in Colorado, New Mexico, Washington, and Canada, with sales of \$90 million. Wild Oats Community Markets is the second-largest retailer in the segment, operating 54 stores in 12 States and Canada, with sales of \$311 million in 1998.

A similar strategy was pursued by Whole Foods Market, which began operations in 1980, and grew rapidly through acquisitions. In October 1992, it purchased Bread & Circus, which operated six natural foods supermarkets in Massachusetts and Rhode Island, followed by the acquisition of Mrs. Gooch's Natural Food Markets with seven stores in Los Angeles, CA. In 1996, it acquired Fresh Fields, a chain of 22 upscale natural foods supermarkets located in the Mid-Atlantic and Midwest. As a result of these activities, coupled with smaller store purchases and new store openings, Whole Foods operated 75 supermarkets in 17 States, generating sales of \$1.05 billion in 1997.

The growth of natural foods supermarkets has taken place mostly in urban central cities and their surrounding suburban areas. These markets range in size from Boulder, CO, to Los Angeles, CA. Demographics likely play a key factor in deciding where to locate new stores. Because natural food products generally cost more, retailers must price them accordingly in order to cover store operating costs. The price premiums often associated with natural foods dictate that stores be located near households with above-average incomes, which are generally found in major metropolitan areas.

Store Focus Differs, but Becoming More "Mainstream"

Although natural foods supermarkets are similar to their traditional counterparts by virtue of the complete coverage of food and non-food departments, and by meeting minimum sales requirements, differences in the importance of food categories (measured by share of store sales) often vary greatly (table 1). Aside from the produce department, bulk foods are very limited in traditional supermarkets, yet many natural foods shoppers are accustomed to purchasing grains, seeds, cereals, and dried fruits in this manner. Produce receives a greater share of natural food shoppers' dollars, as expected, while only about one-third as much fresh meat, seafood, and poultry are sold in natural foods supermarkets. The importance of packaged foods in natural foods stores is comparable to that of traditional supermarkets, however. Evidence of changing preferences among natural foods supermarket shoppers can be seen in the sizable share of sales of prepared food, outpacing the share of sales found in traditional supermarkets.

Among format types, natural food supermarkets (which are not normally classified separately) would account for a relatively small share of total supermarket sales (table 2). However, surveys indicate interest in natural and organic food products is becoming more widespread. Consumer interest in alternatives to traditional supermarket offerings, coupled with the expected approval of Federal organic-certification standards, will likely result in natural food products capturing a larger share of the mainstream consumers' food dollars.

Evidence of the changes in consumer preferences can be found in the efforts of traditional supermarkets to introduce more organically grown foods, including packaged products. Some of the largest food retailers across the country are expanding natural foods offerings in their stores. For example, Albertson's, A&P, and Publix have announced that they will offer processed organic foods—such as frozen entrees, sauces, dressings, tortilla chips, pretzels, and syrups—in addition to organic produce items. Traditional retailers are also experimenting with different ways to display natural foods, whether

Table 1
Major Differences in Sales by Natural Foods and Traditional Supermarkets

Food category	Natural foods supermarkets	Traditional supermarkets
	Percent of sales	
Bulk foods	8.0	0.1
Produce	19.0	14.2
Beverages	5.0	6.7
Meat and seafood	6.0	19.4
Packaged products	32.0	28.5
Refrigerated and frozen foods	13.0	14.9
Snacks	4.0	3.3
Bakery	3.0	4.3
Foodservice	10.0	8.6

Source: *Food Institute Weekly Digest*, 5/12/97, and *Supermarket Business*, Sept. 1997.

Table 2

Natural Foods Supermarkets Are the Smallest Supermarkets, in Both Numbers and Share of Sales

Supermarket format	Share of supermarkets		Share of supermarket sales	
	1997	1980	1997	1980
	Percent		Percent	
Natural foods	0.7	NA	0.7	NA
Conventional	43.8	85.0	18.5	73.1
Superstore	30.8	8.9	43.2	17.7
Combination	12.0	.9	21.0	4.0
Warehouse/limited assortment	9.5	4.7	7.2	4.2
Superwarehouse	2.1	.5	3.9	1.0
Hypermarket	1.0	NA	5.4	NA

Notes: NA = Not applicable. Data may not sum to 100 due to rounding. A natural foods supermarket is a full-line grocery store meeting minimum annual sales for a supermarket, and specializing in natural and organic foods. A conventional supermarket is a full-line grocery store, primarily self-service in operation, having minimum annual sales of \$2.5 million or more in 1985 dollars, and adjusted for inflation in subsequent years. A superstore supermarket contains a greater variety of products than do conventional supermarkets, including specialty, services, and considerable nonfood (general merchandise) products. A combination supermarket contains a pharmacy and a nonprescription drug department offering extensive personal care products. A warehouse supermarket contains limited product variety and fewer store services than provided by conventional supermarkets, and incorporates bulk stocking and shelving practices. A superwarehouse supermarket is a larger warehouse store that offers expanded product variety and often service meat, deli, or seafood departments. A hypermarket supermarket is a very large supermarket offering a greater variety of general merchandise—like clothes, hardware, and seasonal goods—and personal care products than other format types.

mixed in with conventional counterparts, or grouped together with distinct labeling and signs in the aisles. Although many traditional supermarket retailers want to meet the needs of consumers seeking natural foods, the selection of products is often governed by the ability of suppliers to distribute across a region or multiple regions, to keep retail price premiums to a minimum, and to meet high quality standards.

Natural foods supermarkets are looking to continued sales growth. Both Whole Foods Markets and Wild Oats Community Markets have ambitious new store and acquisition plans. Wild Oats added 13 stores and entered 4 new States in 1997, and has contracts to open 8 new locations in 1998. Similarly, Whole Foods Markets aims to add 25 new stores by 2000, and by 2003, it plans to operate more than 140 natural foods supermarkets in metropolitan areas across the United States. ■

Sales of Meals and Snacks Away From Home Continue To Increase

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The market for food away from home continues to grow—from \$183 billion in sales (excluding sales tax and tips) in 1987 to \$290 billion in 1997. Over the decade, sales of these foodservice establishments increased an average of 4.8 percent annually, or about 1.7 percent per year when adjusted for inflation.

Today's busy consumers do not always have the time to plan, prepare, and eat meals at home. That plus more disposable income due to two-earner families, more women in the workplace, and less leisure time make convenient and value-priced meals prepared outside the home quite a popular alternative. Home meal replacement (HMR) is also a growing trend. These complete "home-style" meals are prepared in stores and provide convenient, wholesome, cost-effective, and preparation-free dining either on the premises or at home.

Commercial (for profit) establishments constitute the largest sector of the foodservice market, accounting

for 79 percent of the industry sales in 1997 (table 1). The commercial foodservice sector includes separate eating places—full-service restaurants and lunchrooms, fast-food/quick-service outlets, cafeterias, and caterers—and foodservice operations located in other facilities, such as lodging places; recreation and entertainment facilities; retail establishments (called retail hosts), like department stores and limited-price variety stores; and separate drinking places.

Noncommercial foodservice operators provide food in institutional and educational settings, such as school cafeterias, nursing homes, child daycare centers, and patient feeding in hospitals. The noncommercial sector accounted for 21 percent of total foodservice sales in 1997.

Fast Food the Largest Segment

Fast food accounts for the largest, and fastest rising, share of sales in the foodservice industry. Sales in 1997 reached \$97 billion—outpacing the \$83 billion of receipts earned by full-service restaurants and lunchrooms. However, that has not always been the case. Until 1987,

restaurants and lunchrooms retained the largest share of sales (table 1). Fast-food outlets more than doubled their sales over 1987-97 and captured an increasing share of sales by separate eating places during the past decade—from 49 percent in 1987 to 52 percent in 1997.

The top five U.S. fast-food chains are McDonald's, Subway Sandwiches, Pizza Hut, KFC, and Burger King (table 2). McDonald's is by far the leading foodservice chain, with 23,132 units in over 100 countries and worldwide sales of \$33.6 billion. Subway Sandwiches, a subsidiary of Doctors Associates, Inc., ranks second with over 13,000 units, followed by Pizza Hut with 12,834 units; KFC with 10,237 domestic and international units; and Burger King with 9,644 total units.

The top five U.S. chains are also tops in the international arena, but in a different order. McDonald's still ranks first, followed by KFC, Pizza Hut, and Burger King. Subway is the fifth largest restaurant chain abroad.

Many fast-food chains are also establishing themselves in nontraditional sites, such as supermarkets,

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convenience stores, mobile kiosk operations, push carts, sports centers, and educational institutions. This expansion strategy takes food to where the consumer is.

Two other segments in commercial foodservice increased their sales

from 1987 to 1997—retail hosts and recreation and entertainment. Retail hosts more than doubled their sales from 1987 to 1997. The growth of coffee bars and warehouse clubs is responsible for much of this growth, as well as increased sales at gaso-

line/convenience stores as major oil companies pursue development of more outlets that include foodservice. The growth of multi-theater movie cinemas in high-traffic shopping malls as well as increased attendance at sports centers and

Table 1

Growth in Meal and Snack Sales in the Last Decade¹

Industry segment	1987	1997	Change over decade
			Percent
	Billion dollars		
Commercial foodservice	141,351	229,375	62
Separate eating places	120,494	185,858	54
Restaurants and lunchrooms	58,556	83,079	42
Fast-food outlets	57,882	96,811	67
Cafeterias	3,110	4,188	35
Social caterers	946	1,780	88
Other commercial foodservice	20,857	43,517	109
Lodging places	9,317	14,501	56
Retail hosts	6,027	16,704	177
Recreation and entertainment	3,967	10,515	165
Separate drinking places	1,546	1,797	16
Noncommercial foodservice	41,573	60,851	46
Education	13,430	23,144	72
Elementary and secondary	6,754	11,564	71
Colleges and universities	6,676	11,580	73
Military services	1,769	1,900	7
Troop feeding	1,046	1,042	-0
Clubs and exchanges	723	858	19
Other noncommercial	26,374	35,807	36
Plants and office buildings	4,251	6,544	54
Hospitals	3,528	3,278	-7
Extended-care facilities	5,072	6,094	20
Vending	5,276	5,949	13
Transportation	3,604	4,642	29
Associations	969	1,783	84
Correctional facilities	1,506	3,092	105
Child day care facilities	672	1,919	186
Elderly feeding programs	135	174	29
Other ²	1,361	2,332	71
Total foodservice sales	182,924	290,226	59

Notes: ¹Excludes tax and tips. ²Includes more categories in 1997. Source: USDA's Economic Research Service.

theme parks is responsible for increased growth in recreation and entertainment facilities.

Most Noncommercial Segments Also Showing an Increase

Over the last decade, noncommercial foodservice sales grew 46 percent, from \$42 billion in 1987 to \$61 billion in 1997. Sales over the decade nearly doubled in the education sector, increasing 71 percent in elementary and secondary schools and 73 percent in colleges and universities. Much of this growth was due to increases in enrollment in primary and secondary schools and in colleges and universities, as large numbers of baby boomers' children

Table 2

Top Five Restaurant Chains in the United States and Abroad, 1997

Chain	Units		Countries	Total sales, 1997 Billion dollars
	U.S.	Abroad		
	Number			
McDonald's	14,204	8,928	109	33.6
Subway	11,462	1,874	61	3.2 ¹
Pizza Hut	8,998	3,836	83	4.7
KFC	5,120	5,117	79	4.0
Burger King	7,584	2,060	56	9.8

Notes: ¹Subway's total sales are for 1996. Source: Restaurant Business, selected issues, and company annual reports.

make their way through the education system.

Food sales nearly tripled for child daycare centers between 1987 and 1997 due to an increase in the number of centers. Sales doubled for correctional facilities as the number of inmates grew over the decade.

Sales declined in only one segment of noncommercial foodservice. Hospital foodservice dropped 7 percent between 1987 and 1997, which could be due to a trend toward self-operated foodservice facilities. ■

Nontraditional Retailers Are Challenging Traditional Grocery Stores

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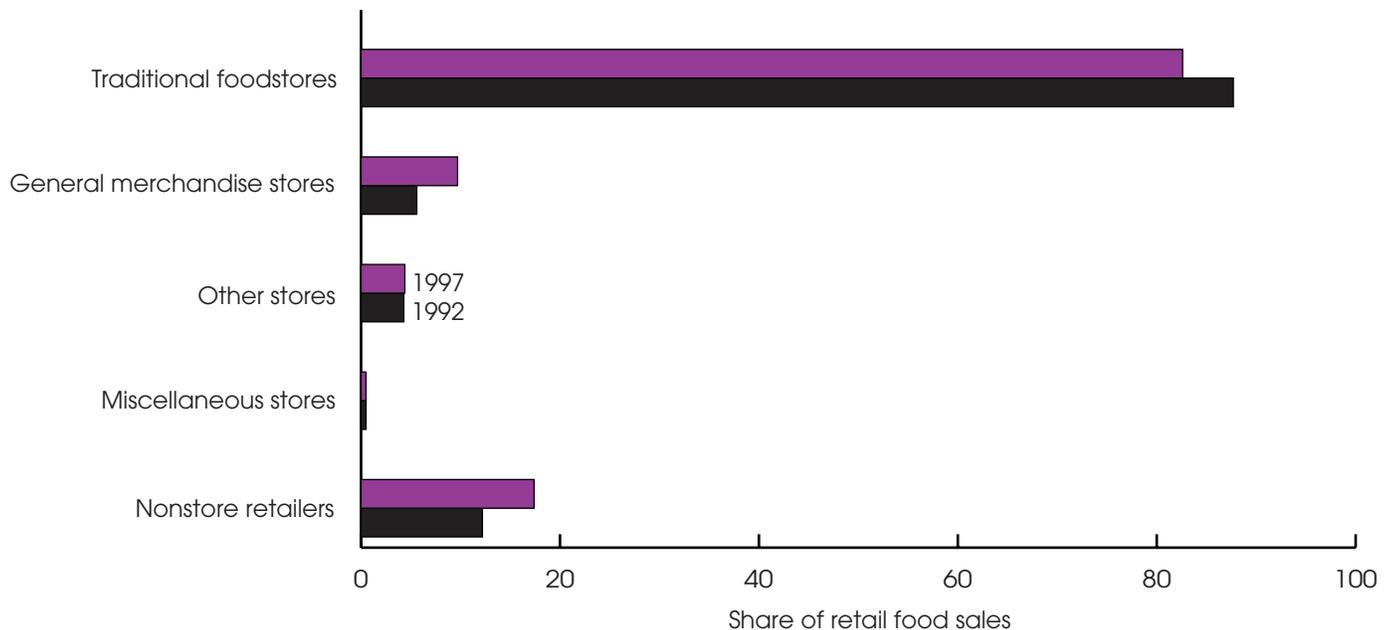
Traditional grocery stores, such as supermarkets, smaller full-line foodstores, and convenience stores, are competing increasingly with other nontraditional retail outlets that offer many food and nonfood products typically found in grocery stores.

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These nontraditional retailers are capturing a growing bite of grocery products sales. Food sales by nontraditional retailers amounted to \$64.9 billion in 1997 compared with sales of \$37.7 billion in 1992, a 72-percent increase. Over the same period, food sales by traditional retailers grew 15 percent to \$308.8 billion. As a result, the share of total retail food sales accounted for by traditional foodstores declined from 87.7 percent to 82.6 percent during 1992-97.

Food sales by nontraditional retailers are expanding as the Nation's shops, stores, and mail order outlets seek growth opportunities while providing greater convenience to consumers. The range of foods offered varies greatly, however, with candy, gum, and beverages common to many retailers. Full-line grocery products are found in many general merchandise outlets, including discount/mass-merchandise stores and warehouse club stores. Other outlets, such as drug-

Figure 1
Food Is Sold Everywhere Among the Nation's Retailers



stores, gasoline stations, department stores, and sporting goods stores, have introduced an increasing array of packaged and canned foods. Mail order retailers offer specialty foods

not often found in traditional foodstores. More food is being sold through vending machines and by home delivery retailers. As a result, the availability of packaged food

products has become almost ubiquitous among the Nation's retailers.

Foodstores—traditional grocery retailers having 50 percent or more of sales from food products—remain

Table 1
Food Sales by Nontraditional Retailers Have Grown

Item	1992		1997	
	Retail food sales	Share of total retail food sales	Retail food sales	Share of total retail food sales
	Thousand dollars	Percent	Thousand dollars	Percent
<i>Traditional retail foodstores:</i>				
Supermarkets	197,042,608	64.346	222,002,648	59.415
Convenience stores	14,674,422	4.792	14,216,118	3.805
Other grocery stores	41,445,824	13.534	50,331,234	13.470
Specialized foodstores	15,314,558	5.001	22,230,000	5.949
Total	268,477,412	87.673	308,780,000	82.639
<i>Nontraditional retail stores:</i>				
<i>General merchandise stores—</i>				
Department stores	255,000	.083	244,000	.065
Discount/mass-merchandise stores	7,724,000	2.522	26,336,000	7.048
Variety stores	740,000	.242	896,000	.240
Warehouse club stores	7,166,000	2.340	7,964,000	2.131
Other general merchandise stores	893,000	.292	795,000	.213
<i>Other stores—</i>				
Auto and home supply stores	13,794	.005	18,339	.005
Drugstores	3,603,546	1.177	5,007,000	1.340
Eating and drinking places	771,709	.252	923,000	.247
Furniture stores	84,692	.028	133,280	.036
Gasoline service stations	8,567,422	2.798	10,398,000	2.783
Hardware stores	28,668	.009	34,089	.009
Lawn and garden supply stores	27,154	.009	41,331	.011
<i>Miscellaneous stores—</i>				
Book stores	9,014	.003	14,270	.004
Florists	31,124	.010	44,116	.012
Fuel dealers	15,714	.005	20,011	.005
Gift, novelty, and souvenir shops	140,351	.046	198,938	.053
Hobby, toy, and game shops	187,780	.061	266,165	.071
Jewelry stores	18,103	.006	25,660	.007
Liquor stores	1,098,404	.359	1,234,000	.330
Pet shops	1,517	.000	2,150	.001
Sporting goods stores	24,029	.008	36,780	.010
Tobacco stores and stands	28,356	.009	41,140	.011
<i>Nonstore retailers—</i>				
Catalog and mail order	736,000	.240	1,008,000	.270
Vending machine operators	2,478,627	.809	4,133,700	1.106
Direct sales (mobile, door-to-door)	3,104,373	1.014	5,052,300	1.352
Total	37,748,377	12.327	64,867,269	17.361

Sources: Census of Retail Trade, Merchandise Line Sales, 1992; "U.S. Food Expenditures," USDA's Economic Research Service, 1998; and ERS estimates.

the single most important retail food segment. Among foodstores, supermarkets were the primary source of retail food sales, with 57.8 percent of the total in 1997. However, the supermarket share has declined from its 64.3-percent share in 1992 (fig. 1 and table 1). Only specialized foodstores, such as meat and seafood markets, retail bakeries, and produce markets, managed to gain sales share over the 5-year period.

Nontraditional sources of retail food products vary in the types and sizes of outlets and extent of food offerings. Their share of total retail food sales rose from 12.3 percent in 1992 to 17.4 percent in 1997. What's more, the nontraditional segment is the fastest expanding source of retail food sales, gaining 12.2 percent in 1997 over 1996 compared with an increase of 2.2 percent for traditional grocery stores.

According to the Census of Retail Trade, some food (including candy, gum, and nonalcoholic beverages) is sold in almost every type of retail outlet, ranging from auto supply stores to sporting goods stores (table 1).

A major contributor to the expansion of nontraditional retail food sales has been general merchandise

retailers including mass/discount-merchandisers and warehouse club outlets. Nontraditional retailers, such as Wal-Mart, K-mart, and Target, and warehouse club operators, such as Costco, Sam's (a division of Wal-Mart), and BJ's, operate stores that often exceed 100,000 square feet of floor space. Mass-merchandise outlets typically offer packaged foods and some frozen foods, along with general merchandise items. In 1988, Wal-Mart opened its first supercenter, featuring 36 general merchandise departments plus an expanded grocery area to rival food departments found in many supermarkets. Since then, outlets with a grocery area similar to supercenters have been developed by other mass-merchandise firms, such as K-mart and Target Stores. As a result of new and remodeled store openings, the number of supercenter-type outlets totaled almost 600 in 1997. From 1992 to 1997, food sales by mass-merchandise retailers surged 26.6 percent, while supermarket sales fell 1.7 percent, after adjusting for inflation. As a result, nontraditional outlets captured 17.4 percent of total retail store food sales in 1997, up from 12.3 percent of sales in 1992.

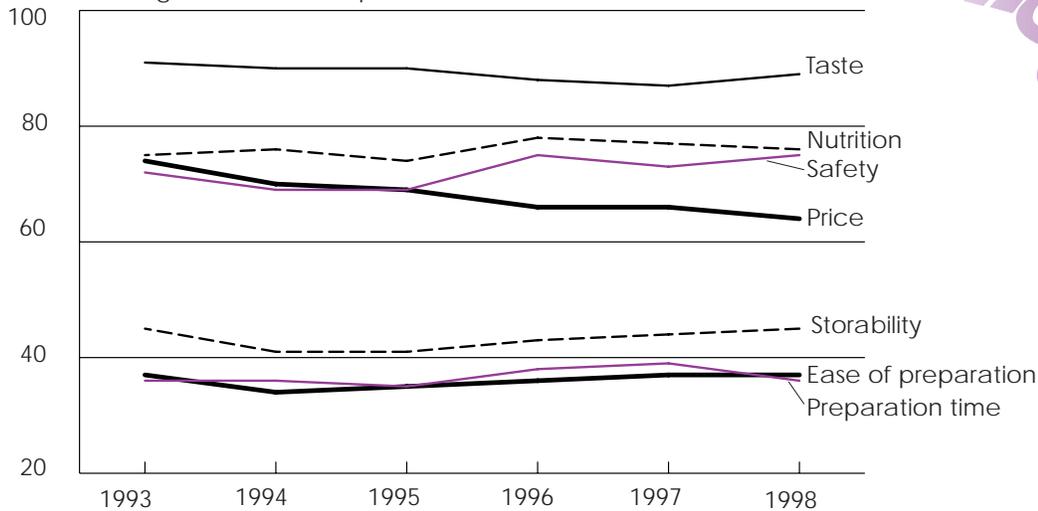
Nontraditional outlets are also challenging grocery stores' sales of nonfood items, such as paper products, soaps, and detergents, and personal care products, which amounted to an estimated 24 percent of sales, or \$97.6 billion, in 1997. As grocery retailers have expanded their nonfood offerings to include floral items, pet supplies, prescription drugs, and video rentals and sales, for example, they have encountered increasing competition from a wide range of retail outlet types, including drugstores, mass-merchandise stores, and warehouse club stores. Comparable nonfood products sales by mass-merchandise retailers and warehouse club stores amounted to an estimated \$62.8 billion in 1997. Differences in the mix of nonfood products offered in other retail outlets makes sales comparisons with grocery stores more difficult and subjective. Nevertheless, nonfood products typically sold in grocery stores are available to varying degrees in many other retail outlet types, providing added sources of competition. Food sales have spread to other retail outlet types as well, in a similar pattern to nonfood products. ■

Food Safety at a Glance

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Consumers Rank Safety Among Top Concerns About Food

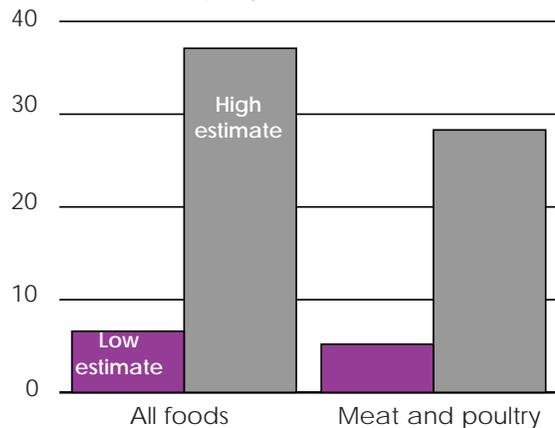
Percent rating attribute as "Important"



Fact Is, Foodborne Illness Costs Society Billions of Dollars Each Year in Medical Costs and Productivity Losses

Even these estimates understate the true picture, as many cases of foodborne illness go unreported because not everyone seeks medical care

Billions of dollars per year



Source: Jean Buzby, Tanya Roberts, C.-J. Jordan Lin, James MacDonald. *Bacterial Foodborne Disease: Medical Costs and Productivity Losses*, AER-741. USDA's Economic Research Service. Aug. 1996.

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New Programs To Promote Food Safety

National Food Safety Initiative

- Strengthen food safety inspection, research, and education

Produce and Imported Food Safety Initiative

- Improve the safety of domestic and imported fruits and vegetables

"HACCP" systems for meat, poultry, and seafood inspection

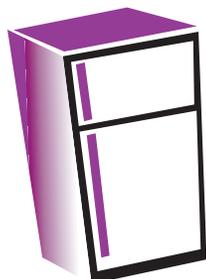
- Hazard Analysis and Critical Control Point systems to reduce the risk of microbial contamination in meat and poultry

New labeling requirements for unpasteurized juices

- Unpasteurized juices must be labeled to warn consumers of possible health risks

New surveillance and detection efforts to rapidly detect and combat foodborne illness outbreaks

- Survey activities is seven "FoodNet" sites around the Nation



The Elderly, Infants, and Pregnant Women Are Most at Risk for Foodborne Illness

Some sources of foodborne illness are...

- bacteria, such as *Salmonella*, *E. coli* O157:H7, and *Campylobacter*
- Parasites, such as *Toxoplasma gondii*
- Viruses, such as hepatitis A and Norwalk virus

Some people have a greater risk of foodborne illness...

- Elderly
- Infants, especially under 1 year of age
- Pregnant women
- People with weakened immune systems, such as cancer or transplant patients or people with HIV/AIDS
- People with chronic illness, such as diabetes or kidney disease



Food Safety Is Everyone's Responsibility

Farm

Pathogens are found to some extent in all farm animals

Livestock operations should be separate from produce operations

Clean water should be used to irrigate produce

Storage/transport

Keep products cold

Clean tanks between shipments

Slaughter/processing

Apply HACCP preventive systems

New technologies can reduce the risk of pathogen contamination

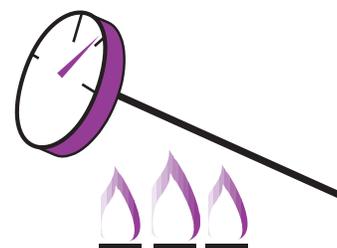
Consumer

Clean: Wash hands and surfaces often

Separate: Don't cross-contaminate

Cook: Cook to proper temperatures

Chill: Refrigerate promptly



Spotlight: Food Assistance

Domestic Food Assistance Expenditures Continue To Decline

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USDA's spending on domestic food-assistance programs totaled about \$17.7 billion during the first 6 months of fiscal 1998 (October 1997-March 1998), almost 7 percent less than in the same period in fiscal 1997 (see table). If this trend continues for the entire year, it will be the second consecutive year in which annual expenditures on food-assistance programs declined from the previous year. (In fiscal 1997, total annual food-assistance expenditures fell 6 percent, the first decrease since fiscal 1982.)

The three principal programs of USDA's network of food-assistance programs—the Food Stamp Program, the National School Lunch Program, and the Special Supplemental Nutrition Program for

Women, Infants, and Children (WIC)—accounted for 86 percent of total food-assistance expenditures during the first half of fiscal 1998. An assortment of smaller programs accounted for the remaining program expenditures.

Most of the decrease in food-assistance expenditures during the first half of fiscal 1998 was due to the contraction of the Food Stamp Program. The \$9.7 billion in expenditures for the program in the first half of fiscal 1998 were 13 percent lower than in the same period the previous year. This decrease was largely the result of the continuing decline in program participation, which fell from an average 23.8 million people per month during the first 6 months of fiscal 1997 to 20.3 million in the first half of fiscal 1998. (At its peak in fiscal 1994, an average of 27.5 million people per month received food stamps.)

Some of the decline in participation can be attributed to the

Nation's favorable economic conditions and low unemployment rate. However, some of the decrease also was due to people becoming ineligible for food stamps as a result of the Personal Responsibility and Work Opportunity and Reconciliation Act of 1996. Under the Act, most legal immigrants were made ineligible until they either became citizens, worked in the United States for at least 10 years, or were veterans with an honorable discharge from U.S. military service. Legal immigrants who were receiving food stamps at the time the Act was enacted, but who were then made ineligible by this provision, were prohibited from participating in the program after August 22, 1997. The Act also stipulates that able-bodied recipients ages 18 to 50 with no dependents

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Table 1

Total Expenditures for Food-Assistance Programs Fell Almost 7 Percent

Program	Fiscal 1997 expenditures ¹		First half of fiscal 1998 expenditures ¹	
	Total	October-March	October-March	Change from first half of fiscal 1997
	Million dollars	Million dollars	Million dollars	Percent
<i>Food stamp-related programs</i>	22,671.0	11,814.3	10,331.2	-12.6
Food Stamp Program ²	21,486.6	11,222.1	9,724.0	-13.3
Nutrition Assistance Programs ²	1,184.4	592.2	607.2	2.5
<i>Child nutrition programs³</i>	8,708.5	4,930.5	5,157.1	4.6
National School Lunch	5,553.8	3,361.5	3,573.9	6.3
School Breakfast	1,214.2	716.0	763.2	6.6
Child and Adult Care ²	1,571.3	803.0	769.9	-4.1
Summer Food Service ²	242.8	4.3	4.8	10.9
Special Milk	17.4	9.2	9.2	1.3
<i>Supplemental food programs</i>	3,953.6	1,988.2	1,934.6	-2.7
WIC ²	3,854.9	1,935.3	1,888.7	-2.4
Commodity Supplemental Food Program ²	98.7	52.8	46.0	-13.0
<i>Food donation programs</i>	415.7	193.9	207.7	7.1
Food Distribution on Indian Reservations ²	71.2	34.4	33.8	-1.7
Nutrition Program for the Elderly	145.2	71.1	72.4	1.9
Disaster Feeding	1.1	.7	.1	-80.9
TEFAP ⁴	191.9	83.4	100.0	19.9
Charitable Institutions and Summer Camps	6.3	4.3	1.4	-70.0
<i>All programs⁵</i>	35,855.7	18,977.9	17,681.3	-6.8

Notes: ¹Data are reported as of March 1998 and are subject to revision. ²Includes administrative expenses. ³Total includes the Federal share of State administration expenses. ⁴The Emergency Food Assistance Program. ⁵Total includes Federal food program administration expenses. Source: USDA's Food and Nutrition Service.

can receive food stamp benefits for only 3 months in every 36-month period, unless they are (1) working at least 20 hours a week, (2) participating in a work or employment and training program for at least 20 hours a week, or (3) participating in some type of "workfare" program. (It was not until March 1997 that States could begin to terminate food

stamp benefits for jobless adults under this provision.) However, a number of States and counties were granted waivers from the time limits, on the basis of local high unemployment rates.

Expenditures for the WIC program fell a little more than 2 percent to just under \$1.9 billion between the first half of fiscal 1998 and the

same period in fiscal 1997. However, not all the food-assistance programs contracted. Expenditures for the National School Lunch Program totaled \$3.6 billion in the first half of fiscal 1998, up 6 percent over the same period in fiscal 1997. ■

Processed Food Trade Surplus Narrowed in 1997

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U.S. exports of processed food and beverages have been growing faster than exports of raw agricultural commodities, and now account for over half of total agricultural exports. Food processors can access international markets by exporting products from their plants located in the United States, or by sales from their foreign subsidiaries located in host country markets. In 1997, sales from U.S.-owned food processing plants abroad totaled about \$134 billion—over four times larger than U.S. processed food exports.

This article examines exports and imports of processed foods, beverages, and related products that fall under Standard Industrial Classification Code 20 (SIC-20). SIC-20 contains 49 food processing industries, including fish and seafood, distilled liquors, and pet food.

Processed food imports continued to grow faster than exports in 1997, but their rate of growth declined. After increasing 11.2 percent in 1996, U.S. imports of processed foods grew a slower 8.7 percent in 1997 to \$30.2 billion. Over the past 5 years, processed food imports averaged a

6.8-percent annual growth rate—considerably higher than during the early 1990's.

In comparison, U.S. exports of processed food grew 3.9 percent in 1997 to \$31.3 billion. While the growth was up substantially from the 2.5-percent rate in 1996, it was still below the average annual increase of 6.5 percent over the previous 5 years. (Export growth was especially strong in 1994 and 1995 at 12.1 and 12.0 percent, respectively.)

Total U.S. trade in processed foods (the sum of imports and exports) rose 6.2 percent in 1997, which was somewhat smaller than the 6.5- and 10.7-percent increases of the previous 2 years. With imports growing faster than exports, the processed food trade surplus (exports minus imports) declined for the second consecutive year in 1997 to \$1.1 billion—down from \$2.4 billion in 1996, and from the record \$4.4 billion in 1995 (fig.1).

The processed food sector has enjoyed continuous trade surpluses since 1992. However, that string could be in jeopardy in 1998. The negative impact of the Asian financial crisis on processed food exports was mild up to December 1997, but will be much stronger in 1998. And, a robust U.S. economy and a strong dollar in 1998 will continue to

attract imports at a higher than average rate. Partially offsetting these effects should be the continued strong growth in U.S. exports to Canada, Mexico, and several European countries. The combined effect nonetheless could erode the trade surplus to near zero or even result in a trade deficit.

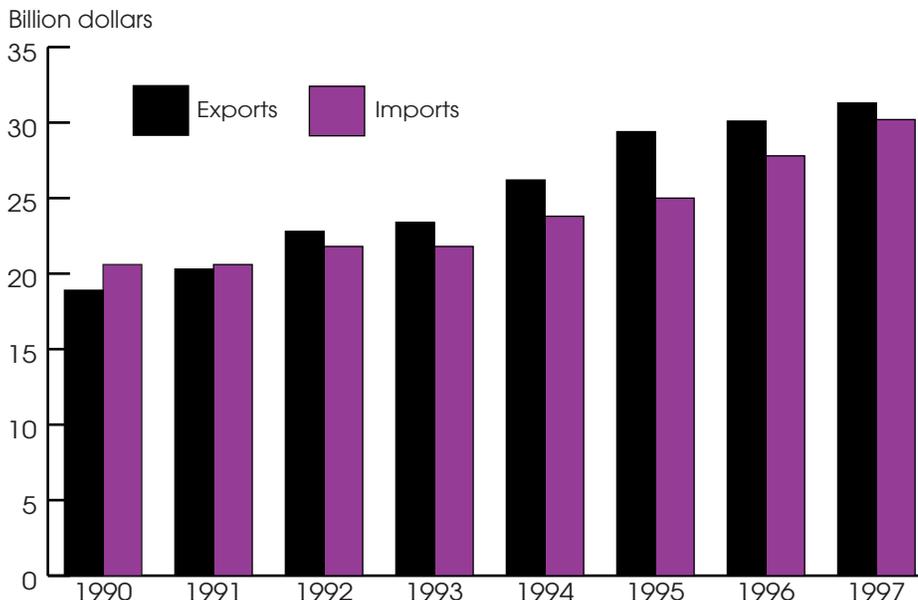
Export Growth Recovered in 1997, Despite the Asia Financial Crisis

Growth in processed food exports improved in 1997 to 3.9 percent, up from 2.5 percent in 1996. In fact, 23 of the 49 processed food industries achieved record export sales in 1997 (table 1). But several of the largest U.S. export industries suffered declines.

After several years of rapid growth, exports of three of the four largest U.S. processed food exports—meatpacking, poultry, and seafood—declined in 1997. These three industries were responsible for 34 percent of total processed food exports in 1997, down from 37 percent in 1996. Products from meatpacking plants, which include all red meats plus byproducts such as hides and skins, are by far the largest U.S. processed food export.

The authors are agricultural economists with the Food and Rural Economics Division, Economic Research Service, USDA.

Figure 1
U.S. Processed Foods Trade Surplus Continued To Narrow in 1997



Meatpacking retained its top ranking, even though exports fell 4 percent in 1997 following a 1.5-percent decline in 1996. With beef and pork exports increasing in 1997, all the decline came from lower foreign sales of hides and skins, edible offals, and variety meats. Fresh and frozen fish fell from the second-largest to fourth-largest export after suffering declines of over 8 percent in both 1996 and 1997. Falling exports were due to a combination of poor U.S. fish harvests and weaker demand in major Asian markets. Processed poultry exports have been among the fastest growing in recent years. But following a 23-percent increase in 1996, exports fell 2 percent in 1997—largely due to slower sales to Russia, the largest market for U.S. poultry.

Soybean oil milling (soybean oil and meal) registered the largest increase in export value of the 49 industries—\$1,048 million over the 1996 level. This represented a 49-percent increase in 1997 following a

6-percent rise the previous year. As a result, soybean oil milling became the second-ranked export in 1997, up from fourth in 1996. Foreign sales of wet corn milling (high-fructose corn syrup, corn oil, and starch) managed only a 1-percent increase in 1997 following an 11-percent growth in 1996. The slowdown was due partly to Mexico's substantial increase in import tariffs on U.S. high-fructose corn syrup. Both canned and frozen fruit and vegetable exports have grown steadily in recent years—which has helped offset a very slow growth in the domestic market for these products.

Wine exports expanded rapidly, up 34 and 28 percent in 1996 and 1997, even as wine imports to the United States have mushroomed. In contrast, beer exports have faltered. They were over twice as large as wine in 1995, but by 1997, exports of wine exceeded beer at \$423 million to \$418 million, respectively. Other industries with rapidly expanding exports were pet food, up 23 and 16 percent in 1996 and 1997, respectively; sausage and prepared meats, up 21 and 160 percent; candy and confectionery products, up 11 and

24 percent; and natural and processed cheese, up 17 and 18 percent.

Leading Export Destinations

Japan continues as the largest export market for U.S. processed foods. But, its share of U.S. exports has been falling, while the shares from U.S. partners in the North American Free Trade Agreement (NAFTA) have been increasing. U.S. exports to Japan fell 11 percent in 1997 (mainly due to lower sales of fish and seafood and prepared feeds), reducing Japan's share of U.S. exports to 21 percent from 24 percent in 1996 (table 2). At the same time, U.S. exports to Canada increased 10 percent to \$5.0 billion, while exports to Mexico rose 20 percent to \$2.4 billion. Canada's share of U.S. exports rose from 15 to 16 percent between 1996-97, while Mexico's share increased from 7 to 8 percent.

Exports rose sharply to both Hong Kong and to mainland China, up 15 percent and 17 percent, respectively. Following a rapid rise in 1996, exports to Russia declined 9 percent in 1997, reflecting lower poultry and meat sales.

Processed food exports to the seven "Asia Crisis" countries (South Korea, Taiwan, the Philippines, Singapore, Thailand, Indonesia, and Malaysia) held up surprisingly well during 1997. These countries all underwent major currency devaluations during the second half of 1997, and collectively accounted for 11 percent of total U.S. processed food exports. Of these seven countries, only Thailand imported less U.S. processed foods in 1997.

However, the outlook for 1998 is very different. U.S. exports to each

Table 1
Leading Processed Food Export Industries

Industry	Exports		Change	
	1996	1997	1995-96	1996-97
	Million dollars		Percent	
Meatpacking	6,008	5,754	-1.5	-4.2
Soybean oil mills	2,128	3,176	6.4	49.3
Poultry processing	2,585	2,532	23.3	-2.1
Fresh or frozen fish and seafood	2,488	2,270	-8.5	-8.8
Wet corn milling (oil and syrup)	1,580	1,596	11.5	1.0
Other food preparations	1,217	1,288	23.1	5.8
Canned fruits and vegetables	1,035	1,114	2.3	7.6
Salted and roasted nuts and seeds	1,225	1,030	24.5	-15.9
Frozen fruits and vegetables	823	879	2.4	6.8
Rice milling	912	814	.5	-10.7
Animal and marine fats and oils	889	792	-14.4	-10.9
Flavorings, extracts, and syrups	787	774	15.6	-1.7
Dry, condensed, and evaporated milk	544	758	-8.5	39.3
Dried fruits and vegetables	675	704	3.7	4.2
Distilled and blended spirits	687	691	-7.6	.6
Prepared animal feed	593	624	-8.7	5.2
Pet food	534	621	23.4	16.3
Vegetable oil milling	437	482	-19.6	10.4
Chocolate and cocoa products	400	434	12.3	8.6
Wines, brandy, and brandy spirits	330	423	34.1	28.2
Malt beverages	453	418	-13.8	-7.8
Sausage and prepared meats	148	386	21.0	160.0
Processed fishery products	421	339	-1.4	-19.4
Flour and grain mill products	349	330	-20.5	-5.3
Sauces and salad dressings	282	309	10.7	9.7
Soft drinks and carbonated water	215	259	-29.8	20.2
Bread and other bakery products	230	248	4.4	8.0
Candy and other confectionery products	189	234	10.6	23.8
Potato chips	222	225	-1.8	1.3
Roasted coffee	199	214	9.4	7.3
Breakfast cereals	177	183	5.1	3.1
Shortening and cooking oils	136	151	10.8	11.3
Blended and prepared flours	139	147	27.9	5.6
Cookies and crackers	116	134	5.9	15.9
Natural and processed cheese	105	123	17.2	17.7
Cane and beet sugar	238	175	-26.5	-38.6
Ice cream and frozen desserts	94	90	7.7	-4.4
Cottonseed oil milling	80	88	-25.4	10.5
Chewing gum	62	86	3.5	37.2
Canned specialties	87	85	-1.1	-1.8
Other frozen specialties	57	72	-2.9	25.7
Frozen bakery products, except bread	62	64	16.4	3.6
Pasta products	42	56	4.1	31.7
Fluid milk	42	51	11.2	19.6
Malt	45	48	5.5	8.3
Creamery butter	42	26	-33.7	-37.5
Manufactured ice	4	7	-41.4	47.5
Total, all industries	30,116	31,305	2.5	3.9

of these seven countries during the first half of 1998 have fallen, ranging from a low of 11 percent to the Philippines to a 72-percent decline in exports to Indonesia. Exports to Japan also have continued their decline by 12 percent. Partially offsetting the bad news is continuing strong export growth to Canada (up 8 percent), Mexico (up 26 percent), and mainland China (up 50 percent). For the first half of 1998, Russia replaced South Korea as the fourth-largest U.S. export market, followed by Hong Kong and China. South Korea fell to seventh place.

Import Growth Remains Brisk

A strong economy, rising per capita incomes, and relatively high value of the dollar continued to make the U.S. market highly attractive for imports. Eleven of the 49 processed food industries had imports of a billion dollars or more in 1997 (table 3). Of these billion-dollar import industries, only cane and beet sugar declined in 1997 (down 9 percent, after a big 58-percent jump the year before). Imports

for 19 industries had gains of 10 percent or more in 1997, down substantially from 33 industries in 1996. In contrast, the dollar value of imports fell for 11 industries in 1997, compared with only 2 of the 49 industries in 1996.

Fresh and frozen fish is by far the largest processed food import. It grew 14 percent to \$6.2 billion in 1997, over twice the value of the next-largest import industry (meatpacking). Major sources of fish imports are Canada, Thailand, Mexico, Chile, and China. Meatpacking is the second-largest import industry, as well as the largest export industry. Imports from meatpacking plants (primarily frozen ground beef in bulk containers and lamb from Australia and New Zealand) grew 14 percent to \$2.8 billion.

Wine is one of the fastest growing processed food imports, growing 23 percent in 1996 and another 18 percent in 1997 to \$2.0 billion—pushing canned fruits and vegetables down to the fourth-ranked industry. Alcoholic beverages constitute one of the largest U.S. import sectors. Wine (ranked third), distilled spirits

(ranked fifth with imports of \$1.8 billion), plus malt beverages (ranked seventh with imports of \$1.5 billion) combined to account for 17.6 percent of total U.S. processed food imports in 1997.

Other industries with double-digit import growth over each of the last 2 years are chocolate and cocoa products; other food preparations; soft drinks; dried fruits and vegetables; cookies and crackers; rice milling; animal fats and oils; breakfast cereals; and pet food.

Leading Import Sources

Just as Canada and Mexico were the largest growth markets for U.S. exports, the two U.S. NAFTA neighbors also dominate as sources for U.S. processed food imports (table 4). The United States imported \$6.3 billion from Canada in 1997—three times the \$2.1 billion imported from Mexico, the second-leading source country. Imports from both of these countries grew at double-digit rates in both 1996 and 1997. Nearly 28 percent of all U.S. processed food imports comes from these two countries. The United States buys a wide

Table 2

Japan and Canada Are the Largest Markets for U.S. Processed Foods

Market	Exports		Share of SIC-20 exports	Cumulative share of SIC-20 exports	Change	
	1996	1997			1995-96	1996-97
	Million dollars			Percent		
Japan	7,209.8	6,433.8	20.6	20.6	-4.6	-10.8
Canada	4,548.7	5,027.6	16.1	36.7	8.3	10.5
Mexico	2,005.3	2,399.1	7.7	44.4	21.6	19.6
South Korea	1,511.0	1,533.8	4.9	49.3	-9.2	1.5
Hong Kong	1,116.6	1,280.0	4.1	53.4	10.2	14.6
Russia	1,281.9	1,163.7	3.7	57.1	32.4	-9.2
United Kingdom	828.3	862.4	2.8	59.9	11.6	4.1
The Netherlands	935.9	849.8	2.7	62.6	1.8	-9.2
China (Taiwan)	753.9	818.1	2.6	65.2	-3.5	8.5
China (Mainland)	555.8	649.3	2.1	67.3	-14.9	16.8
Germany	731.3	643.1	2.1	69.4	22.7	-12.1

Table 3
Leading Processed Food Import Industries

Industry	Imports		Change	
	1996	1997	1995-96	1996-97
	Million dollars		Percent	
Fresh or frozen fish and seafood	5,434	6,224	-3.2	14.5
Meatpacking	2,498	2,850	.2	14.1
Wines, brandy, and brandy spirits	1,724	2,031	23.0	17.8
Canned fruits and vegetables	1,731	1,799	15.1	3.9
Distilled and blended spirits	1,714	1,764	10.6	2.9
Vegetable oil milling	1,473	1,516	18.7	2.9
Malt beverages	1,341	1,514	12.5	12.9
Chocolate and cocoa products	1,400	1,471	26.6	5.1
Processed fishery products	1,173	1,327	9.2	13.1
Other food preparations	1,093	1,219	11.7	11.6
Cane and beet sugar	1,198	1,095	57.6	-8.6
Frozen fruits and vegetables	731	743	29.0	1.6
Dry, condensed, and evaporated milk	621	583	23.5	-6.2
Natural and processed cheese	584	548	6.4	-6.1
Soft drinks and carbonated water	388	485	21.5	25.0
Salted and roasted nuts and seeds	445	470	8.4	5.6
Candy and other confectionery products	417	452	9.3	8.4
Bread and other bakery products	360	364	2.5	1.1
Sauces and salad dressings	319	343	12.7	7.5
Roasted coffee	301	315	6.5	4.7
Dried fruits and vegetables	274	315	11.9	15.0
Pasta products	269	292	4.5	8.8
Wet corn milling (oil and syrup)	285	266	18.0	-6.5
Cookies and crackers	224	266	16.8	18.8
Prepared animal feed	246	244	20.8	-.8
Rice milling	163	207	27.6	27.1
Animal and marine fats and oils	150	186	29.0	24.3
Breakfast cereals	122	151	21.2	23.3
Pet food	127	144	25.8	13.8
Sausage and prepared meats	136	134	-15.4	-1.1
Flavorings, extracts, and syrups	119	106	4.4	-10.5
Chewing gum	85	101	3.0	18.6
Flour and grain products	106	91	22.7	-13.7
Shortening and cooking oils	82	87	15.9	6.2
Blended and prepared flours	60	83	50.9	37.4
Frozen bakery product, except bread	76	81	27.0	6.1
Canned specialties	57	70	6.2	22.4
Soybean oil milling	83	65	58.6	-21.9
Poultry processing	45	46	46.3	2.1
Potato chips	30	33	22.2	9.6
Manufactured ice	26	24	37.5	-6.5
Malt	23	21	20.5	-6.1
Creamery butter	9	20	556.5	115.1
Fluid milk	9	10	93.2	3.9
Other frozen specialties	6	8	4.4	31.8
Ice cream and frozen desserts	4	4	50.9	16.3
Cottonseed oil milling	1	*	253.1	-35.5
Total, all industries	27,761	30,171	11.2	8.7

Note: *Less than \$0.5 million.

Table 4

Canada Is Also the Largest U.S. Import Source

Source	Imports		Share of SIC-20 imports	Cumulative share of SIC-20 imports		Change	
	1996	1997		1995-96	1996-97		
	Million dollars		Percent				
Canada	5,662.4	6,277.1	20.8	20.8	15.6	10.9	
Mexico	1,795.9	2,084.9	6.9	27.7	12.0	16.1	
Thailand	1,584.4	1,649.4	5.5	33.2	-2.8	4.1	
France	1,374.3	1,554.1	5.2	38.4	11.6	13.1	
Italy	1,307.9	1,369.4	4.5	42.9	21.9	4.7	
United Kingdom	903.2	934.9	3.1	46.0	11.3	3.5	
The Netherlands	841.6	913.2	3.1	49.0	4.2	8.5	
New Zealand	782.4	864.6	2.9	51.9	-1.8	10.5	
Australia	715.5	824.7	2.7	54.6	-2.7	15.3	
Ecuador	635.4	822.2	2.7	57.3	-4.7	29.4	

variety of processed foods and beverages from Canada, but the leading imports include red meat products, fish, vegetable oils, chocolate, liquor, and beer. The major imports from Mexico are fish, beer, processed fruits and vegetables, and liquor.

Thailand, our third-largest source of processed foods, is the only Asian country among the top 10 source countries. Thus, the impact of the Asian financial crisis on U.S. imports of processed food was small in 1997, and should remain small in 1998. Thailand's major exports to the United States are fresh and frozen fish and canned tuna.

Imports from France consist primarily of beverages—wine, liquor, soft drinks, and bottled water. Italy, another billion-dollar import source, ships mostly vegetable oils, wine,

cheese, and pasta to the United States. The leading processed food imports from the United Kingdom were liquor and candy, while the top imports from The Netherlands included beer and candy. In addition to meat products, U.S. imports from New Zealand and Australia consist mainly of dry and condensed milk, fish, sugar, and wine. Ecuador replaced Brazil as the only South American country in the top 10 source countries in 1997. Imports from Ecuador, mostly fresh and frozen fish and chocolate and cocoa products, surged 29 percent to \$822 million.

Processed food imports for 1998 will likely grow slower than in 1997. For the first half of 1998, imports

grew nearly 3 percent over the first half of 1997. Even though Asian currencies have significantly devalued, processed food imports into the United States from those countries have not increased with one exception—imports from Thailand (mostly fish products) have increased about 19 percent in the first half of 1998. Imports from Mexico and Australia are also showing double-digit growth—up 12 percent and 20 percent, respectively over first half of 1997. Imports from China, our twelfth-largest source of processed foods, declined 3 percent. This decline, coupled with a 50 percent increase in U.S. exports should result in a substantial processed food trade surplus with China in 1998. ■